

JVC

SERVICE MANUAL

MODEL

RC-646L/LB

FM-SW-MW-LW

4-BAND RADIO

STEREO CASSETTE

RECORDER



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Specifications

DIMENSIONS: 24.1cm(H) x 42.4cm(W) x 12.1cm(D)
9-1/2" x 16-3/4" x 4-3/4"

WEIGHT: Approx. 4.5 kg (with batteries)
9.9 lbs.

TUNER SECTION

Frequency Ranges : FM 88~108MHz
SW 6~18MHz
MW 540~1600kHz
LW 150~350kHz

RECORDER SECTION

Tape Speed : 4.8 cm/s (1-7/8 ips)
Track System : 4-track 2-channel stereo
Recording System : AC Bias
Erasing System : DC Erasing
S/N Ratio : 40dB at 1kHz
Fast Forward Time : Within 100 sec. (C-60 cassette)
Rewinding Time : Within 100 sec. (C-60 cassette)
Wow & Flutter : 0.09% (WRMS)

AMPLIFIER SECTION

Speakers : 12 cm (5") x 2, 3.2Ω

Power Output : Max. 5.4W (2.7W+2.7W)(DC)
4W (2W+2W)(DC) at 10% THD
Input Jacks : MIC x 2 (0.8mV, low imp.)
Output Jacks : Ext. Speaker x 2 (3.2~8Ω)
Headphones x 1 (8Ω)

Input/Output Jack : DIN
POWER CONSUMPTION : 12W (RC-646L)
9.5W (RC-646LB)

SEMICONDUCTORS

ICs : 7 + 2 (Microphone)
Transistors : 21 + 2 (Motor governor)
Diodes : 33 (5 LEDs)

POWER SOURCE

DC : 9V, 6 "R20", "U2" cells or equivalent
AC : 110/220/240V, 50/60Hz

Technical Information

This recorder is adopted with the full auto stop mechanism, MULTI MUSIC SCANNER and timer standby facility.

Full Auto Stop Mechanism

When the tape is finished in any mode: playback, record, fast forward and rewind, the tape transporting mechanism stops and the corresponding control buttons return to their normal positions and the power is shut off.

MULTI MUSIC SCANNER (Automatic program selection facility)

Newly developed MULTI MUSIC SCANNER (MMS) can select the next or preceding program, skipping the present program.

The MMS mechanism operates by detecting non-recorded sections on the tape. (Non-recorded sections of 3~4 seconds)

Timer Standby Facility (Timer recording and playback)

The facility can perform recording or playing back at any desired time by using an audio timer.

The PAUSE button is automatically released and the recording or playing back starts when the power is applied from the timer.

Circuitry of MMS and Auto Stop Mechanism

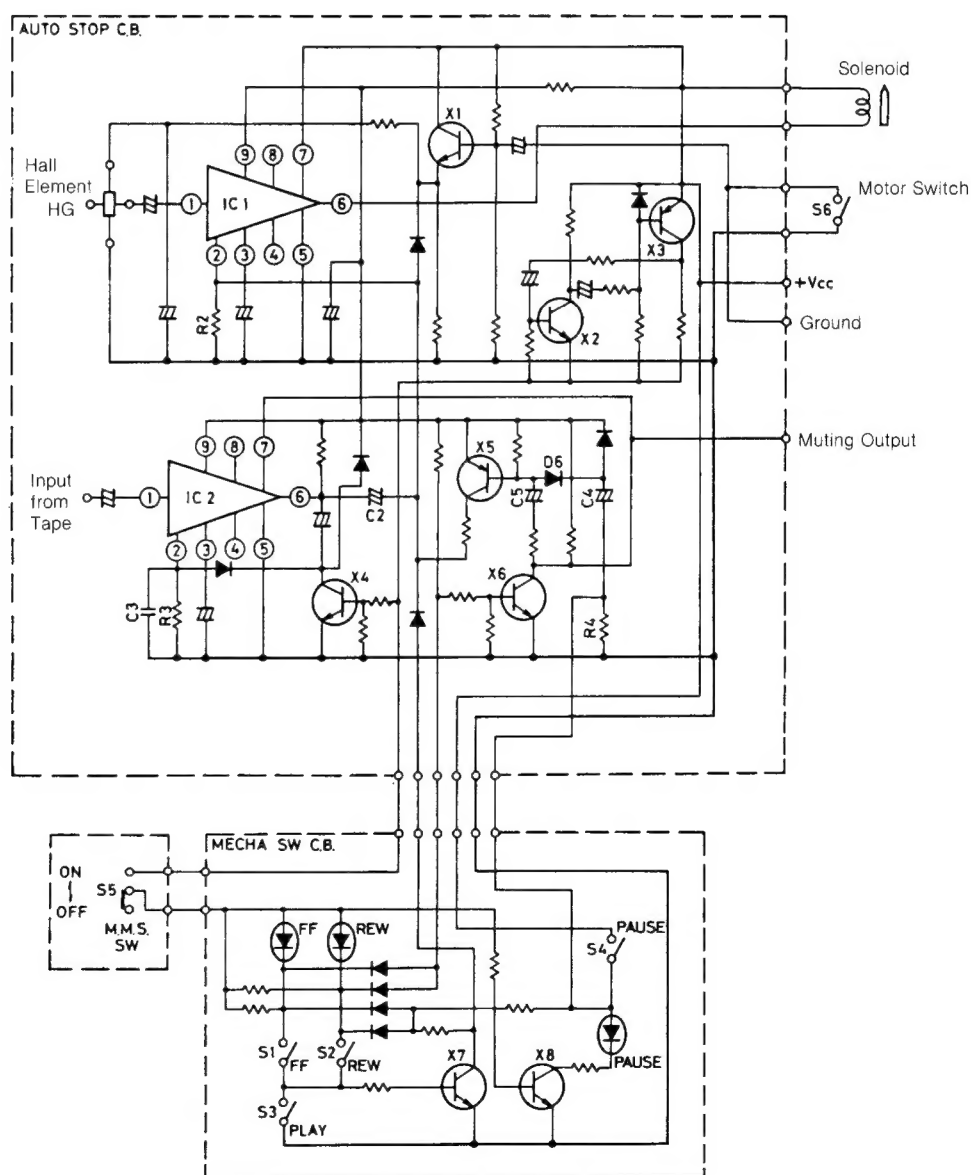


Fig. 1

A. Auto Stop Mechanism

The tape stop is detected by the Hall element (HG) which is located in the magnetic field of ring magnet: the magnet is connected to the shaft of the tape counter and it is rotating while the tape is running. The Hall element generates the sine wave signal by rotating magnet while the tape is running.

When the input signal of the IC1 has stopped, the logical level of the No. 6 terminal becomes "L" (low) level.

If the No. 6 level become "L", voltage difference occurs across the solenoid, so that the current flows through the solenoid and the plunger functions to stop the mechanism.

B. MMS Operation

In the MMS mode, switches S1 (or S2), S3 and S5 have been ON position and the transistor X4 has been OFF state.

The logical level of the terminal No. 6 of IC2 changes in accordance with the input signal level of terminal No. 1: If the input level is more than $-50\text{dBs} \pm 5\text{dB}$, the terminal No. 6 becomes "H" (High) level. If it is less than $-50\text{dBs} \pm 5\text{dB}$, becomes "L" level.

While the signal from the tape being supplied to the No. 1 terminal of IC2 the terminals No. 2 and No. 6 become "H" level.

When the input signal has stopped, i.e. a non-recorded section between programs on the tape has positioned to the play/record head, No. 6 terminal changes into "L" level.

If No. 6 terminal has been "L" level, the current flows across the solenoid and the plunger functions to stop the MMS mechanism.

C. Timer Standby Facility

In the timer standby mode, switches S3, S4 and S6 are in the ON position and the power supply is cut off.

When the power supply turns on at the time set by the timer, the No. 2 and No. 6 terminals of IC1 become "L" level, as the capacitor C2 has not been charged, so that the solenoid functions to release the PAUSE button. And the recording or playing back starts.

D. Prevention Circuit Against Double Action

1. When the PAUSE button is released

At the moment when the PAUSE switch S4 is turned off by releasing the PAUSE button, the capacitor C4 is charged by the current flows through X5 and D6, so that the transistor X5 turns ON state.

The collector current of X5 raises the level of No. 2 terminal of IC1 into "H" level, so that the No. 6 terminal changes into "H" level.

When the terminal No. 6 becomes "H" level, the current flows through the solenoid is cut off and the plunger is prevented from functioning once again.

2. When the CUE or REVIEW button is released

At the moment when the switch S1 (or S2) turns off, while the switch S3 is ON, transistor X6 becomes ON state and the capacitor C5 is charged by the current flows through X5, so that the X5 changes into ON state.

The proceeding process is the same as the preceding item "1. When the PAUSE button is released".

E. Indicator Flicker Circuit

The transistors X2 and X3 construct the multivibrator circuit. The multivibrator is a relaxation oscillator and drives the MMS indicators to flicker.

The transistor X8 acts as a switch to flicker the PAUSE indicator.

F. Ripple Filter

The transistor X1 constructs a ripple filter which is designed to reduce the ripple current flowing through the Hall element.

G. Anti-Pause Killer Circuit

In the fast forward or rewind mode, to function the auto stop mechanism though the PAUSE button has been depressed, the anti-pause killer circuit stops the current supplying to the No. 2 terminal of IC1 by switching the transistor X7 off.

Main Parts Location

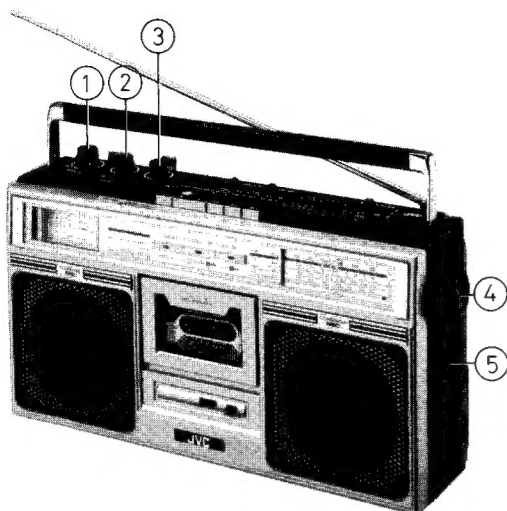


Fig. 2

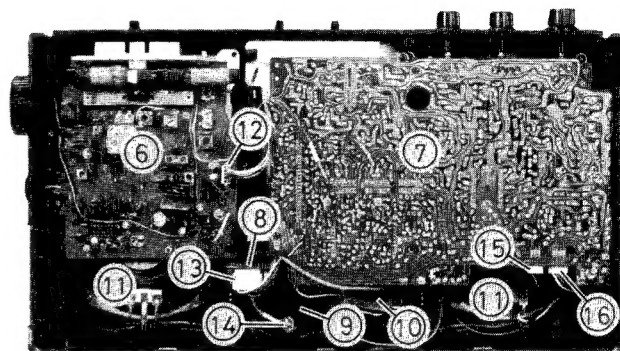


Fig. 3

Ref. No.	Parts No.	Parts Name	Description	Q'ty
1	VXL4045-001	Knob	VOLUME	1
2	VXKM520-30012	"	BALANCE	1
3	VXKM520-30012	"	tone	1
4	VXL4021-001	"	Tuning	1
5	VXKM520-20010	"	FINE TUNING	1
6	*	Circuit Board Ass'y	Tuner	1
7	*	"	Amplifier	1
8	*	"	Auto Stop	1
9	*	"	Connector	1
10	*	Cassette Mechanism Ass'y		1
11	EAS12P126SH	Speaker	12cm (5"), 3.2Ω	2
12	*VDM5051-003-002	Connector & Wire Ass'y	CN1-S	1
13	*VDM5041-003-003	"	CN801-S	1
14	*VDM5051-003-001	"	CN304-S	1
15	*VDM5051-003-005	"	CN303-S	1
16	*VDM5051-003-004	"	CN302-S	1

- Note:**
1. Asterisked parts (*) show "NEW PARTS". Other parts are all "CURRENT PARTS"; therefore, check your inventory and order situation before placing new order to avoid making extra stock.
 2. The circuit board assemblies and whole assembly of cassette mechanism in this model will not be available as spare parts.
 3. The parts marked \triangle are the important parts for safety assurance. Use the specified part, when replacing the safety assurance part, never use an equivalent one.

Disassembly & Replacement

A. Rear Cabinet

1. Remove the battery cover.
2. Remove 7 screws (1)~(7): SDSB3020R.
3. Disconnect 3 connectors from the rod antenna (white) and power supply section (red & black).

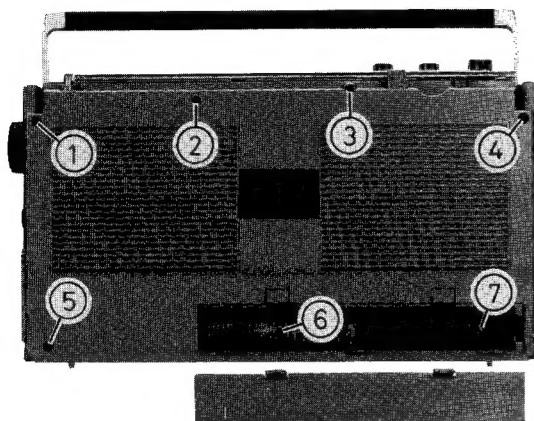


Fig. 4

C. Amplifier Circuit Board

1. Take off the volume, balance and tone control knobs.
2. Disconnect 3 connectors (B), (C) & (D).
3. Remove 6 screws (10)~(13): SPSP3006VS and (14) & (15): SBSB3010C.

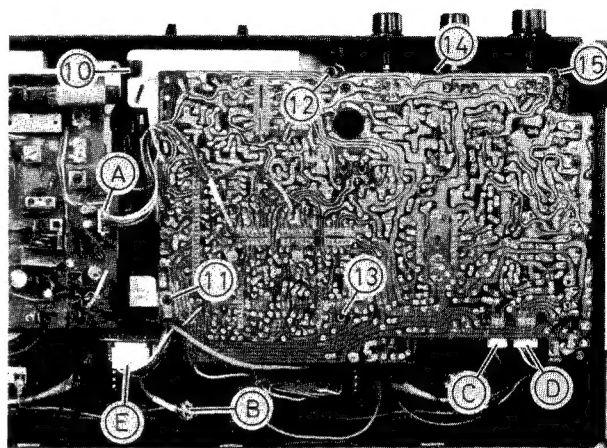


Fig. 6

B. Tuner Section

1. Take off the tuning and fine tuning knobs.
2. Disconnect the 5-pin connector (A) from the amplifier section and the connector (F) to the speaker terminal.
3. Remove 2 screws (8) & (9): SBSB3025C.

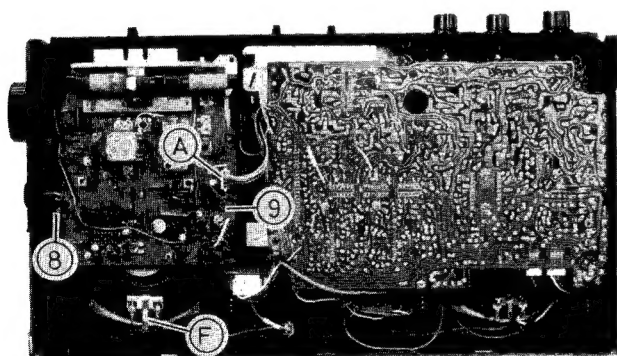


Fig. 5

D. Amplifier Section (with Cassette Mechanism)

1. Take off the volume, balance and tone control knobs.
2. Disconnect 4 connectors (A), (B), (C) & (D).
3. Remove 7 screws (14)~(20): SBSB3010C.
4. Open the cassette case by depressing the STOP/EJECT button to disengage the internal mechanism.

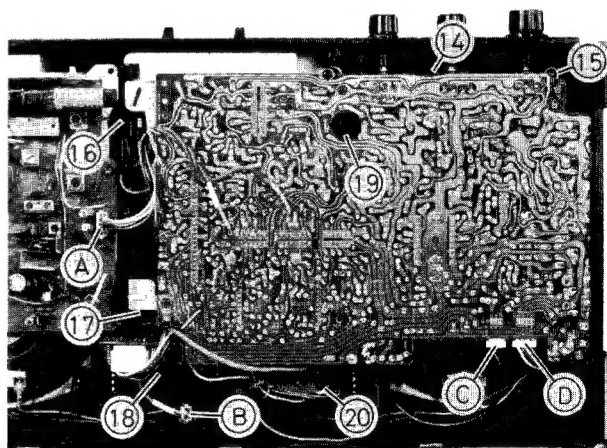


Fig. 7

E. Cassette Mechanism

1. Remove the amplifier section in accordance with the item D.
2. Remove 4 screws (10) ~ (13): SPSP3006VS.
3. Desolder wires from the motor, heads and leaf switch on the cassette mechanism.
4. Disconnect the connector (E).

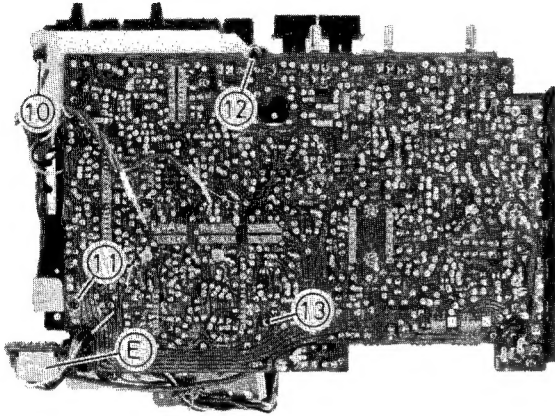


Fig. 8

G. Power Supply Section

Remove 2 screws (21) & (22): SBSB3014C.

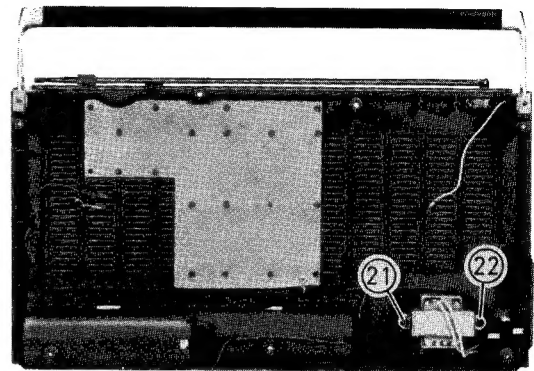


Fig. 10

F. Jack Board

1. Remove the amplifier circuit board as following the item C.
2. Remove 2 screws (23) & (24): SBSB3012Z.

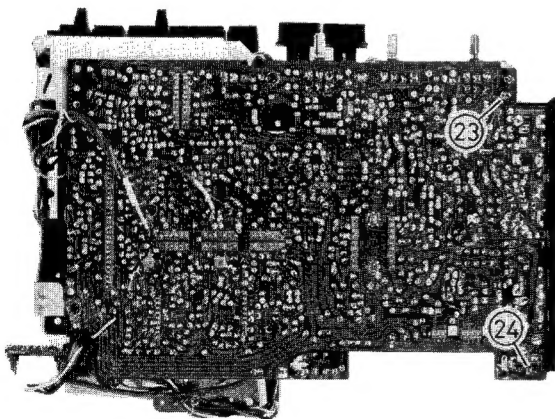


Fig. 9

Tuner Alignment

Output Measuring: Speaker terminal (Impedance = 3.2Ω), output level 50mW (0.4V/ 3.2Ω)

AM IF & RF Alignment

Input (SSG) Modulation 400Hz, Modulated to 30%

Step	Frequency Band	Input Signal		Place to be aligned	Set the V. Capacitor to
		Frequency	Given to		
1	MW (IF)	455kHz	Loop Antenna	T2, 3	Minimum
2		Repeat the Step 1, and adjust for no further improvement.			
3	LW	145kHz	Loop Antenna	L7	Maximum
4		360kHz		TC6	Minimum
5		Repeat the Steps 3 & 4.			
6		160kHz	Loop Antenna	L4	160kHz Signal
7		350kHz		TC1	350kHz Signal
8		Repeat the Steps 6 & 7, and adjust for no further improvement.			
9	MW	520kHz	Loop Antenna	L8	Maximum
10		1650kHz		TC7	Minimum
11		Repeat the Steps 9 & 10.			
12		600kHz	Loop Antenna	L5	600kHz Signal
13		1400kHz		TC2	1400kHz Signal
14		Repeat the Steps 12 & 13, and adjust for no further improvement.			
15	SW	5.8MHz	Rod Antenna through Dummy Antenna	L9	Maximum
16		18.6MHz		TC8	Minimum
17		Repeat the Steps 15 & 16.			
18		6.0MHz	Rod Antenna through Dummy Antenna	L6	6.0MHz Signal
19		18.0MHz		TC5	18.0MHz Signal
20		Repeat the Steps 18 & 19, and adjust for no further improvement.			

FM IF & Discriminator Alignment

Input (Sweep Generator) : TP3 (hot)

Output (Oscilloscope) : IF TP4 (hot) & TP7
Discriminator TP6 (hot) & TP7

Step	Mode	Place to be aligned	Wave form
1	IF	T1, 4	Peak
2	Discriminator	T5	S-curve

FM RF Alignment

Input (SSG): • Use 75Ω terminal, modulation 400Hz modulated to 22.5kHz deviation.
Connect Hot side to TP1 and Cold side to TP2.

Step	Frequency Band	Input Signal		Place to be aligned	Set the V. Capacitor to
		Frequency	Given to		
1	FM	87.5MHz	TP1 & TP2	L3	Maximum
2		109MHz		TC4	Minimum
3		Repeat the Steps 1 & 2.			
4		90MHz	TP1 & TP2	L1	90MHz Signal
5		106MHz		TC3	106MHz Signal
6		Repeat the Steps 4 & 5, and adjust for no further improvement.			

FM MPX Alignment

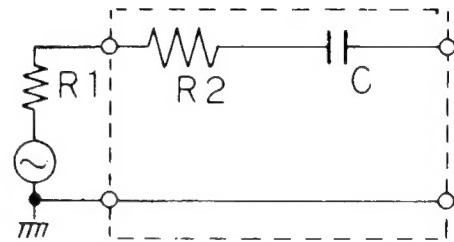
A. Regular Method

1. Connect a frequency counter to the test point TP5.
2. Supply the monaural signal (98MHz, 60dB) across the test points TP1 and TP2.
3. Adjust the variable resistor VR1 so that the frequency becomes $19\text{kHz} \pm 100\text{Hz}$.

B. Simplified Method

1. Tune to a FM stereo broadcast.
2. Set the variable resistor VR1 to a center position of the range where the stereo indicator keeps lighting.

Dummy Antenna



$$R1 + R2 = 80\Omega$$

$$C = 10\text{pF}$$

R1 : Output impedance of S.S.G.

Fig. 11

Parts Arrangement for Alignment

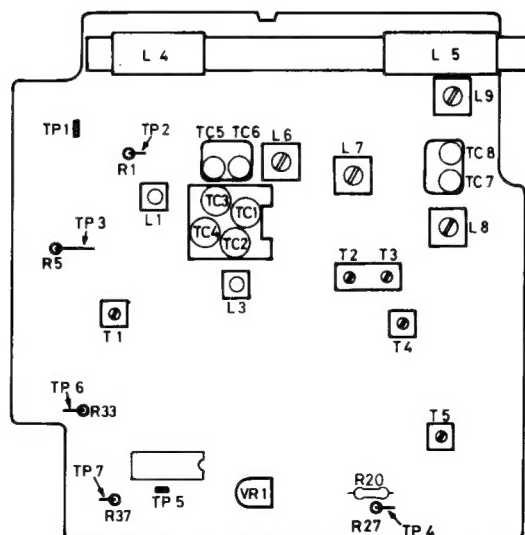


Fig. 12

Adjusting Recording Bias

Bias Frequency

1. Connect a frequency counter across TP101.
2. Set the BEAT CUT switch to left position.
3. Adjust the oscillator coil L301 so that the counter indicates 68kHz.

Bias Current

1. Connect a V.T.V.M. across TP101 and TP201.
2. Adjust the variable resistor VR101 (L) and VR201 (R) so that the voltage becomes 4.5mV ($450\mu\text{A}/10\Omega$).

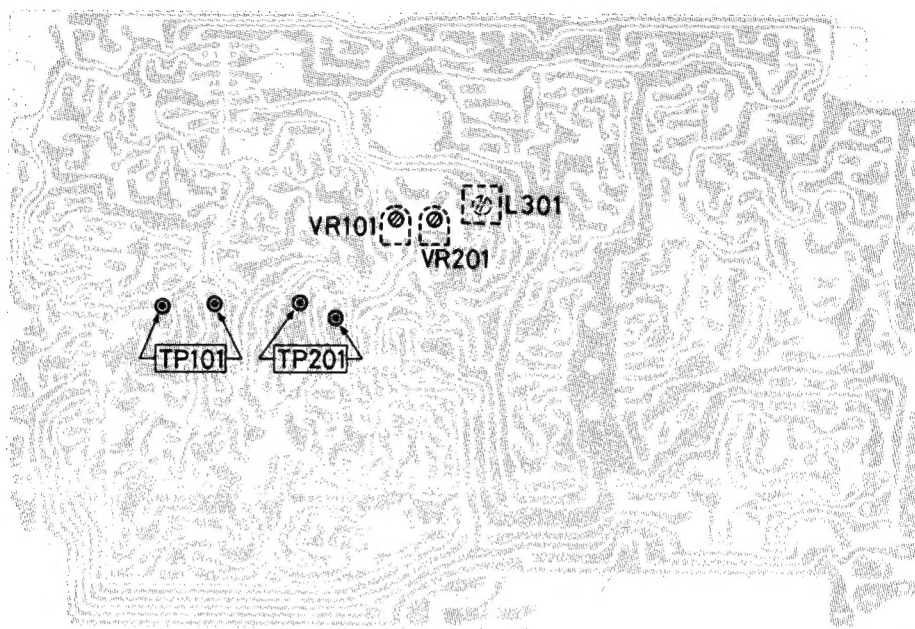


Fig. 13

Adjusting Head Azimuth

Regular Method

1. Connect a dual channel oscilloscope to the speaker terminals.
2. Set the MODE switch to the STEREO position.
3. Playback the test cassette for azimuth adjustment.
4. Adjust the head azimuth so that the output signals of left and right channels will become maximum and in phase.

Note: If a single channel oscilloscope will be used, apply the left channel signal to the X-axis and the right to the Y-axis and draw the Lissajous figure.

Simplified Method

1. Connect a V.T.V.M. across the speaker terminal.
2. Set the MODE switch to MONO.
3. Playback the test cassette for azimuth adjustment.
4. Adjust the head angle for maximum output.
Note: The output voltage shows three peaks while adjusting head angle as illustrated on the right, adjust for maximum peak.
5. Check that the output difference between MONO and STEREO is within 3dB.

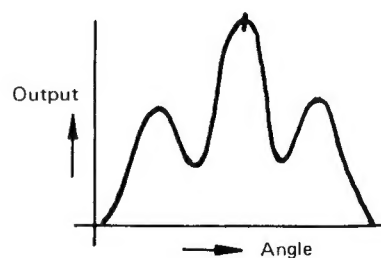


Fig. 14

Adjustment of Cassette Mechanism

Timing of Auto Stop Motion

1. The auto stop mechanism should function at the moment when the tip of stop detect contact has been moved within 0.5 to 1.8mm in the playback mode.
2. If the timing is more than 1.8mm, bend the part (A) of stop detect lever to the B direction. If it is less than 0.5mm, bend the part (A) to the C direction

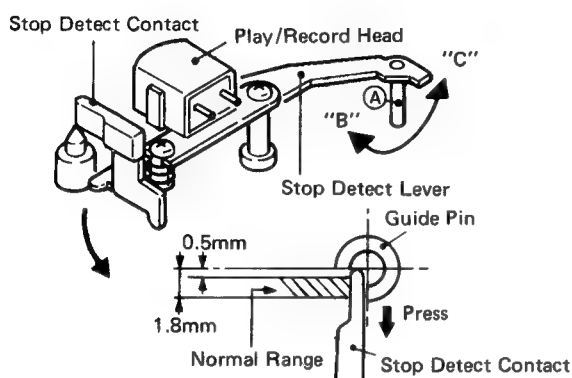


Fig. 15

Detection pressure of Auto Stop Mechanism

1. Setting the mechanism vertically in the playback mode, the auto stop mechanism should function at the pressure of 45 to 65g when the tip of stop detect contact has been pulled upwards by a tension gauge. (Refer to Fig. 16)
2. If the pressure is less than 45g, bend the adjusting arm to the A direction. If it is more than 65g, bend to the B direction.

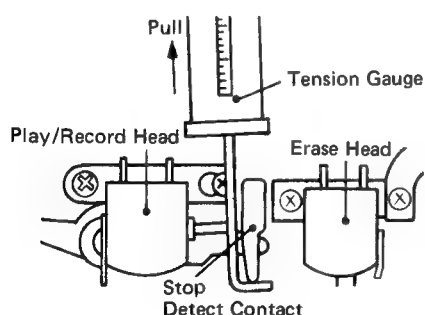


Fig. 16

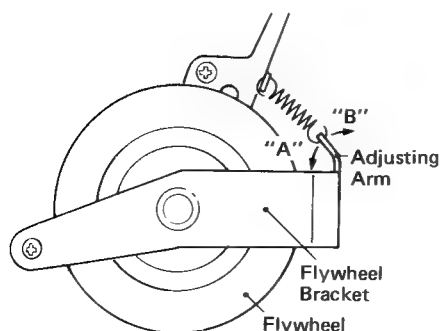


Fig. 17

Thrust of Flywheel

The clearance between the top of flywheel shaft and the flywheel bracket should be within 0.1 to 0.4mm. If the clearance is beyond the limits, adjust the screw for normal value.

Note: After adjustment, fix the screw with lock adhesive.

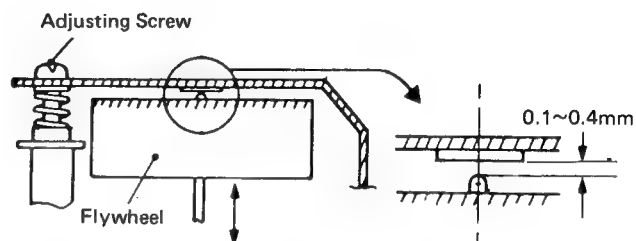


Fig. 18

Pause Mechanism

1. In the playback mode, check to see that the pinch roller separates from the capstan shaft and stops turning and then the reel disk stops turning and the tape stops when the PAUSE button has been pressed. Check to see that the tape restarts and is normally transported when the PAUSE button is released.
2. If the timing of pause mechanism is out of order: the takeup reel disk stops first and then the pinch roller stops, so that the tape is projected from the cassette half.

Adjust the timing by bending the part (C) of pinch arm lever to the A direction.

3. The space between the pinch roller and the capstan shaft should be more than 0.5mm. If it is less than 0.5mm bend the part (C) to the A direction, and if it is excess bend the part (C) to B direction.

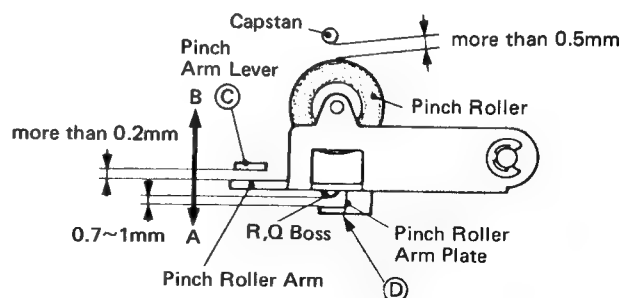


Fig. 19

Cue & Review Mechanism

1. Timing of Cue Action

- In the playback mode, if the CUE button is gradually pressed, the pinch roller stops turning first and then the takeup reel disk stops. If the CUE button is released, the takeup reel disk turns first and then the pinch roller rotates.
- If the timing is out of order, adjust it as follows.
 - If the tape is projected from the cassette half at the beginning of cue action, adjust it by bending the part (C) of pinch arm lever to the A direction as shown in Fig. 19.
 - If the tape is fast forwarded at the beginning of cue action, bend the part (C) to the B direction as shown in Fig. 19.

2. Timing of Review Action

- In the playback mode, if the REVIEW button is gradually pressed, the pinch roller stops turning first and then the takeup reel disk stops. If the REVIEW button is released, the takeup reel disk turns first and then the pinch roller rotates.
- If the timing is out of order, adjust it as follows.
 - If the tape is projected from the cassette half at the beginning of review action, bend the part (C) to the A direction as shown in Fig. 19.
 - If the tape is fast forwarded at the beginning of review action, bend the part (C) to the B direction as shown in Fig. 19.

Notes: 1. After adjustment, if the pinch arm lever has been bended, check the pause timing and check that the gap between the pinch roller arm and pinch arm lever is more than 0.2mm when the REVIEW button is pressed in the recording mode.

2. After adjustment check that the gap between the RQ boss and the pinch roller arm plate is within 0.7 to 1mm. If it is beyond the limits, adjust it by bending the part (D) of pinch roller arm plate as shown in Fig. 19.

Location of Heads

The play/record and erase heads should be positioned as shown below in the playback mode.

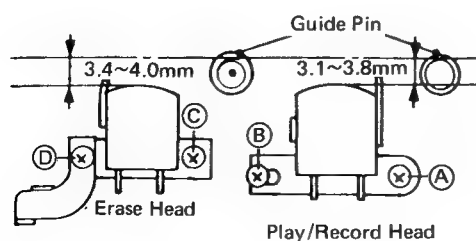


Fig. 20

Pressure of Pinch Roller

- Setting the mechanism vertically in the playback mode, the pinch roller should stop turning at the pressure of 350~500g when the pinch roller arm has been pulled upwards by tension gauge as shown in Fig. 21.
- If the pressure is out of limit, change the pinch roller spring.

Note: If the pressure is excessively high, it may cause the noise from the pinch roller bearing and defective in wow and flutter. If the pressure is defectively low, it may cause defective in Auto stop motion and in wow and flutter.

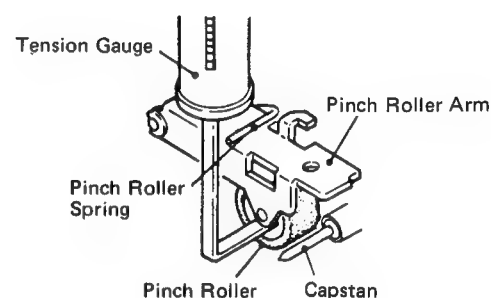


Fig. 21

Playback Torque

- The playback torque should be within 40 to 70g-cm.
- If the torque is less than 40g-cm, set the clutch spring to the 3 position. If it exceeds 70g-cm, set the clutch spring to the 1 position.

Note: Before adjusting the torque wipe off the surface of rubber parts and rotating parts, if the torque is not sufficient.

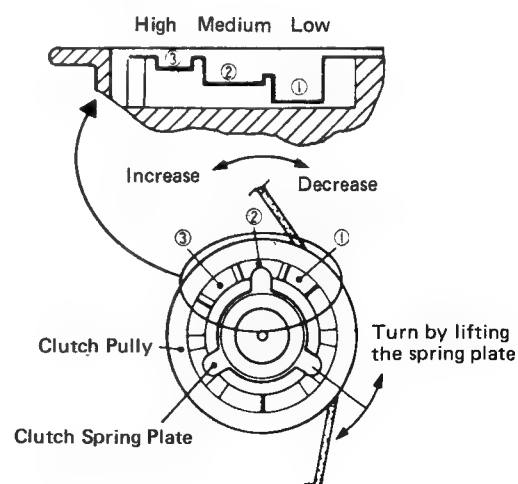


Fig. 22

How to Fit Dial Cord

Adjustment of F.F. & Rewind Torque

1. Fast Forward Torque

In the fast forward mode, check that the F.F. torque is within 100 to 160g-cm by applying the torque gauge to the take-up reel disk.

a. If the torque is less than 100g-cm, adjust as follows.

- 1) If the rotation of F.F. idler which is contacted with the flywheel stops or fluctuates when the take-up reel disk is stopped turning by the fingers, bend the part A of F.F. button lever to the C-direction.
- 2) If the F.F. idler contacted with the flywheel is turning constantly when the take-up reel disk is stopped turning, turn the three-flap clutch spring plate counterclockwise (1→2→3→4) to obtain the proper torque.

b. If the torque is over 160g-cm, turn the clutch spring plate clockwise (4→3→2→1) to obtain the proper torque.

2. Rewind Torque

In the rewind mode, check that the rewind torque is within 100 to 160g-cm by applying the torque gauge to the supply reel disk.

If the torque is out of standard, adjust it as same method as items a. & b. of "Fast Forward Torque".

1. Dial Cord

Material : Teton
Diameter of cord : 0.6mm (24 mil)
Whole length of cord : 775mm (30-1/2")

2. Turn the dial drum fully clockwise.

3. Fit the cord in numerical order as shown below.

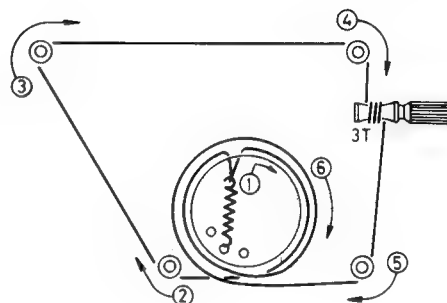


Fig. 24

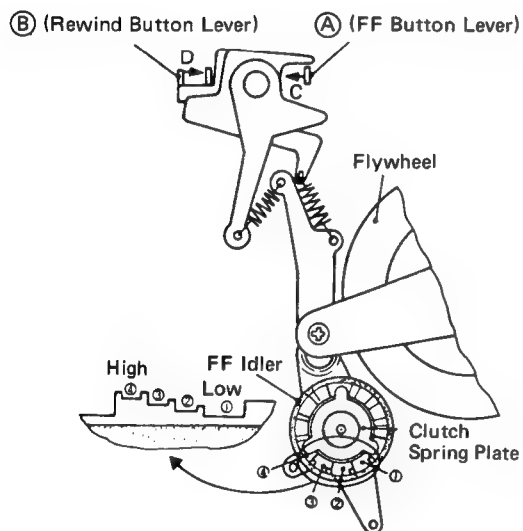
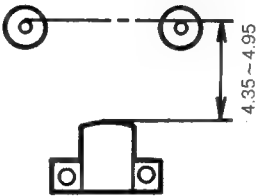


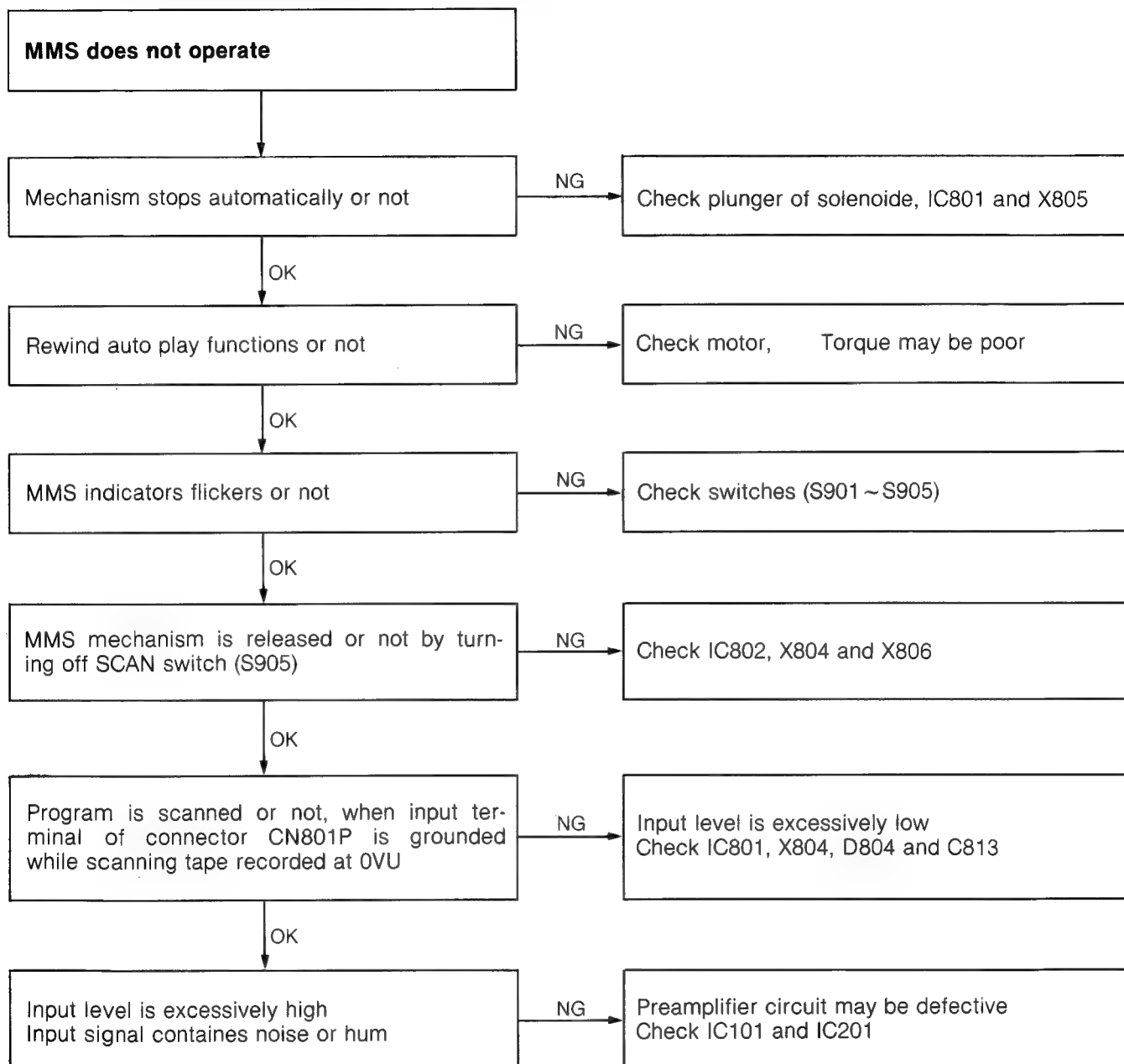
Fig. 23

Specifications of Cassette Mechanism

Check the following items when replacing the component parts of cassette mechanism.

Item	Specifications	Remarks
1. Power Supply (Motor)	Rated Voltage DC 9V Operating Voltage DC 6.0 ~ 11V	Item 2 should be complied at the upper and lower limit of operating voltage.
2. Tape Speed	4.8cm/s (1-7/8 ips) 3000Hz + 3%, -2% Deviation 2%	2940Hz ~ 3090Hz
3. Wow & Flutter	Less than 0.25% (RMS)	
4. Take-up Torque	Play 40 ~ 70g.cm Fast Forward 100 ~ 160g.cm Rewind 100 ~ 160g.cm	
5. Winding Time (at rated voltage)	Fast Forward Within 100 sec. Rewinding Within 100 sec.	C-60 cassette
6. Supply Current (at rated voltage)	Play Max. 150mA F.F. Max. 360mA Rewind Max. 360mA	
7. Button Pressure	Play Max. 2.0 kg F.F. Max. 2.0 kg Rewind Max. 2.0 kg Stop Max. 2.0 kg Record Max. 2.5 kg Cue Max. 2.0 kg Review Max. 2.0 kg Eject Max. 1.0 kg Pause Max. 1.0 kg	
8. Pinch Roller Pressure	350 ~ 500g	
9. Head location of CUE and REVIEW Modes	 <p>Play/Record Head</p>	The PLAY and CUE (or REVIEW) buttons have been depressed.
10. Auto Stop Mechanism	In the every mode: playback, record, fast forward and rewind, the mechanism should stop automatically at the time when 4.3V is applied across the solenoid after the tape has been taken up while the decreased voltage of 5.0V has been supplied to the motor.	
11. MMS Operation	In the MMS mode: PAUSE, PLAY and CUE (or REVIEW) buttons have been depressed, if 4.9V is applied for a moment across the solenoid after the tape has been taken up while the motor has been supplied 5.0V, the PAUSE button should be released first and then the CUE (or REVIEW) button released.	
12. Timer Standby Facility	If 4.3V is supplied to the solenoid, the PAUSE button should be released when the PAUSE has been depressed in the playback or recording mode while the motor is driven by 5.0V.	

Troubleshooting on MMS



MMS indicators do not flicker though MMS operates

- Multivibrator circuit may be defective, check X802 and X803.
- Electrolytic capacitor may be lack of capacitance, check C807 and C808.
- If PAUSE indicator do not flicker or light, X902 and D908 may be defective.

Immediately auto stop mechanism functions

- Hall element (HG801) is far away from ring magnet. Check distance, normal range is $1\text{mm} \pm 0.5\text{mm}$.
- Output of Hall element may be poor.
- IC801 may be defective.

- Resistor R801 may be lack of resistance. (Normal value: $150\text{k}\Omega$)
- Bias circuit of X801 is not optimum. Base voltage is nearly equal to a half of V_{cc} .
- X805 may be defective. Common emitter dc current gain h_{FE} may be lower than normal.
- Capacitors C814 and C816 may be defect in capacitance.

Auto stop mechanism does not operate in FF and rewind modes when PAUSE button being pressed

- X901 may be defective.

Block Diagram

Tuner Section

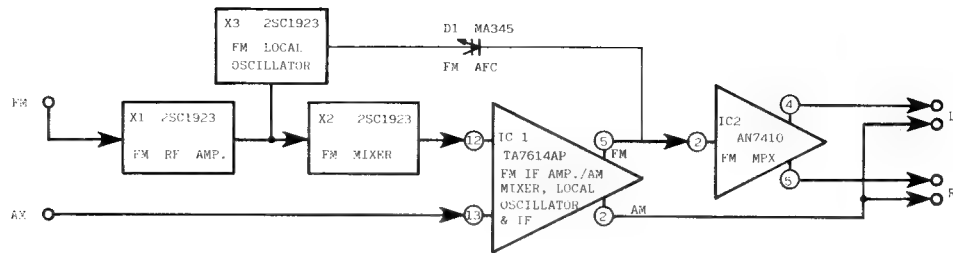


Fig. 25

Play back Mode

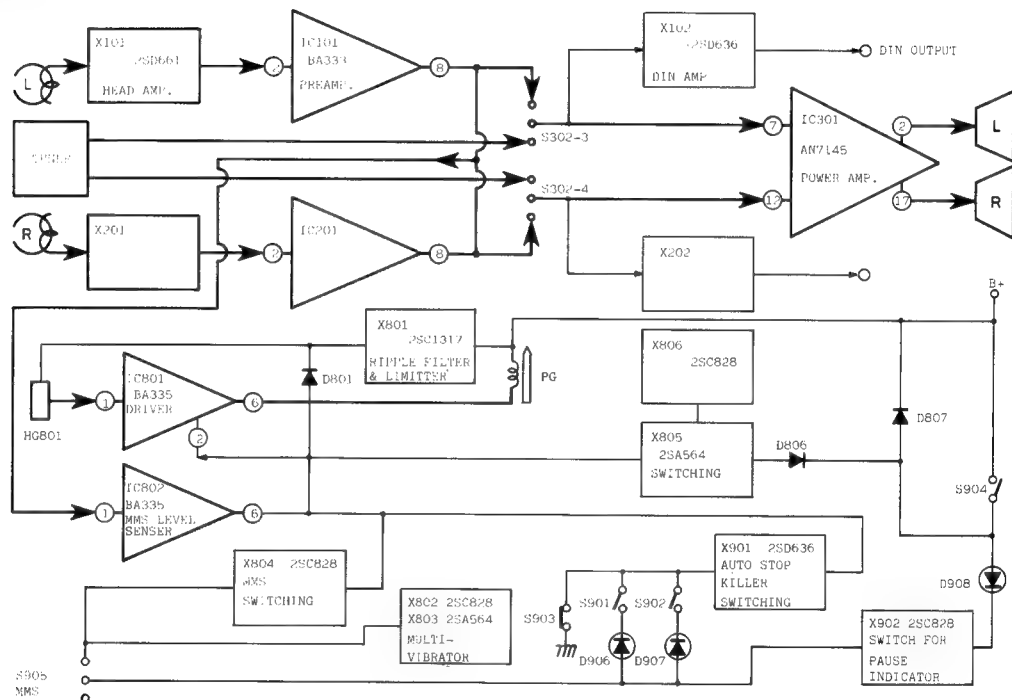


Fig. 26

Recording Mode

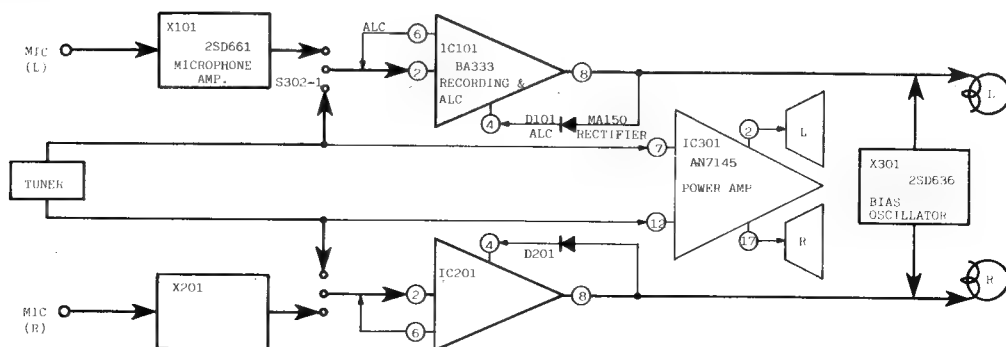


Fig. 27

Wiring Connection

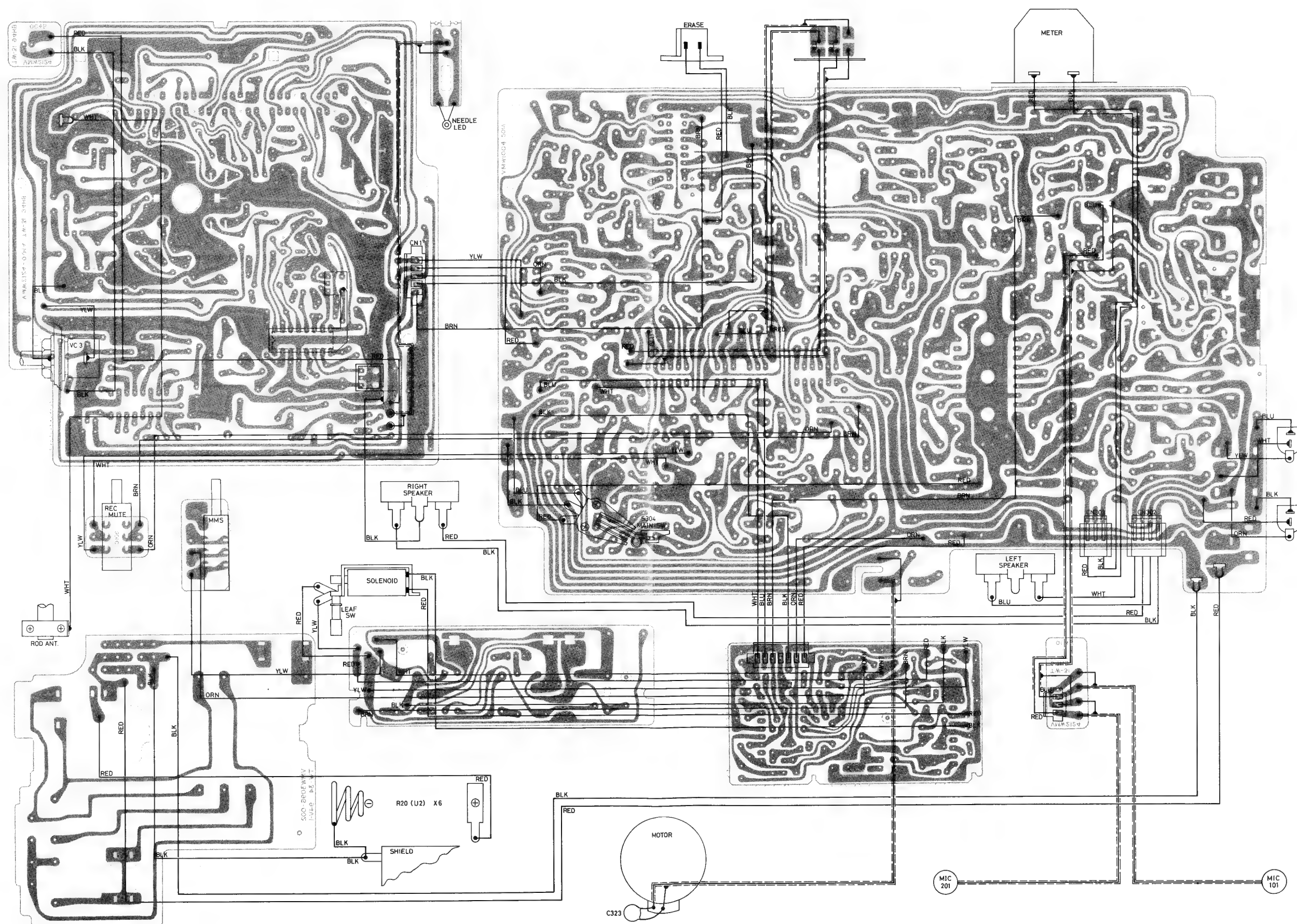


Fig. 28

Schematic Diagram of RC-646L/LB (Tuner)

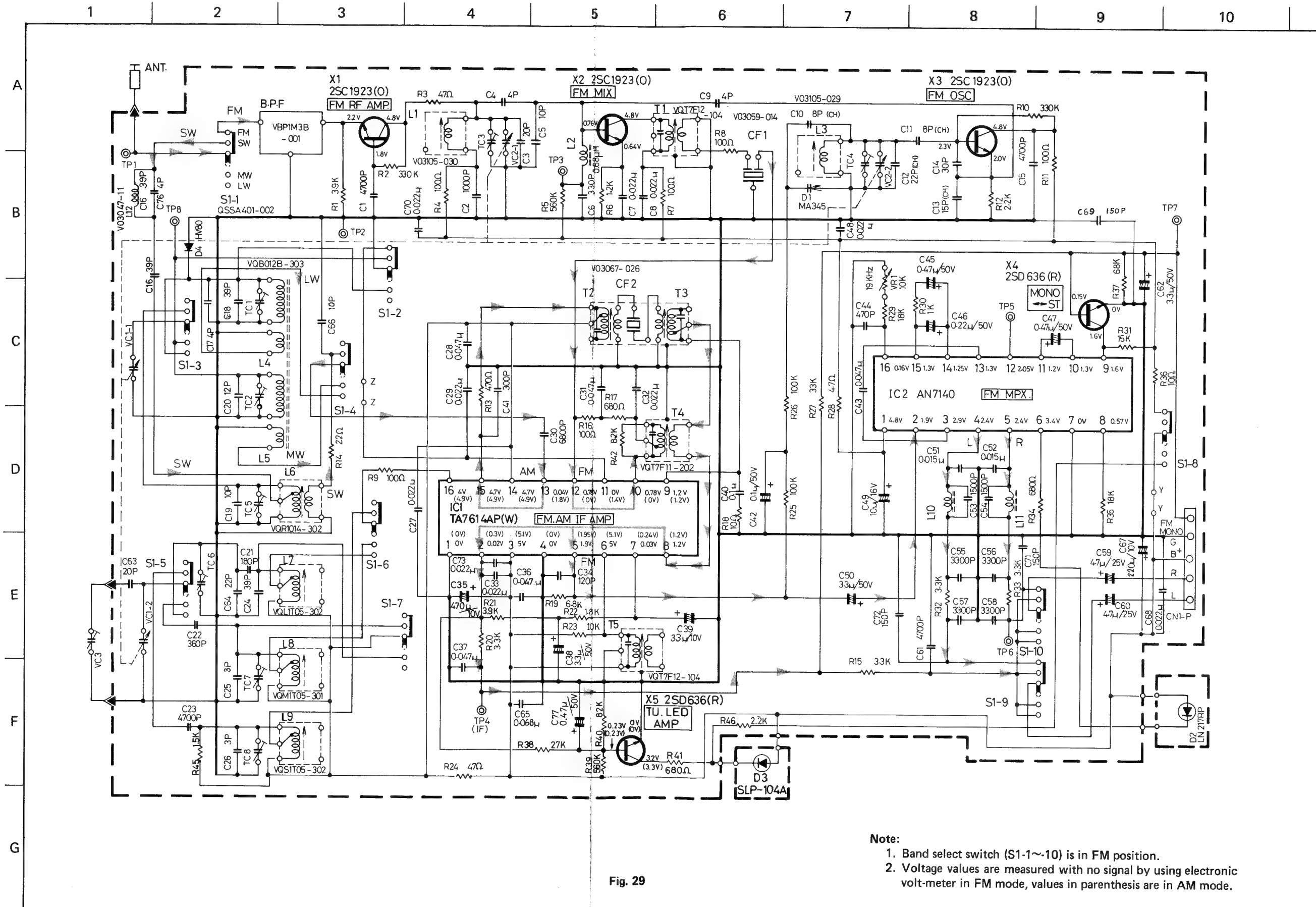


Fig. 29

SWITCH NO.

NO.	USED FOR	POSITION
S301-1---12	REC/PLAY	PLAY
S302-1---9	TAPE/RADIO	TAPE
S303-1---	MODE	STEREO
S303-1---	BEAT CUT	1
S304	METER ON/OFF	ON
S305-1---	DIN ON/OFF	OFF
S306	REC MUTE	OFF
S701	AC/BATT	BATT
S702-1---	AC240V/220V/110V	AC 220V
S901	FF	OFF
S902	REW	OFF
S903	PLAY	ON
S904	PAUSE	OFF
S905	MMS ON/OFF	OFF

Note:
1. Voltage values are measured with no signal by using electronic volt-meter.

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Note:

1. Voltage values are measured with no signal by using electronic volt-meter.
Values in parenthesis are in recording mode.
Values in rectangle show MMS switch is in OFF position.
2. Shaded parts show safety assurance parts.

Tuner Circuit Board Ass'y

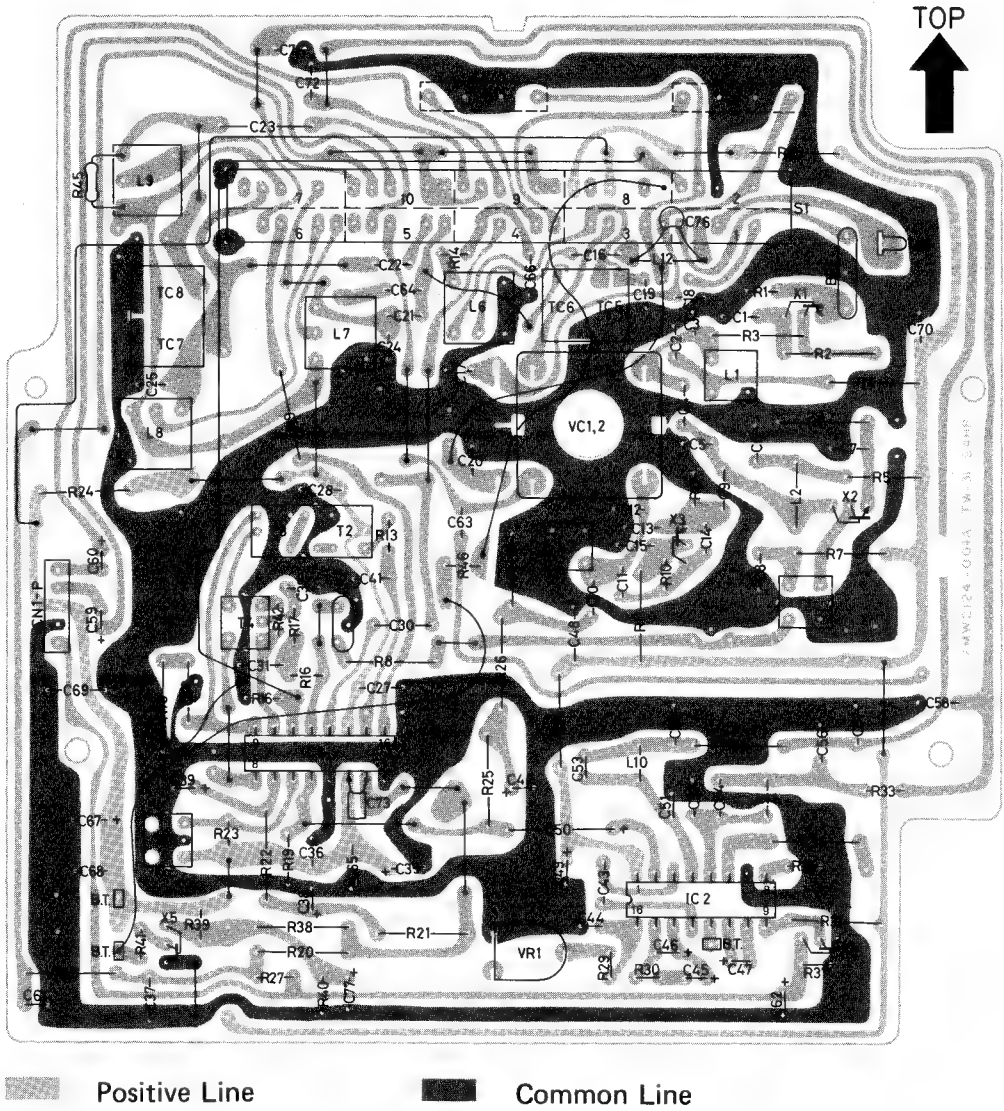


Fig. 31

Note: The circuit board assembly will not be available as spare part.

Transistors

Ref. No.	Parts No.	Description	Pc	fT
X1,2,3	2SC1923(O)	Silicon (TOSHIBA)	0.1W	
X4	2SD636(R)	" (MATSUSHITA)	0.4W	

ICs & Diodes

Ref. No.	Parts No.	Parts Name	Description
IC1	TA7614AP(W)	Integrated Circuit	TOSHIBA
IC2	AN7410	"	MATSUSHITA
D1	MA345	Variable Capacitance Diode	"

Resistors

Ref. No.	Parts No.	Parts Name	Description
R1	QRD141K-392	Carbon	3.9kΩ 1/4W
R2	" -334	"	330kΩ "
R3	" -470	"	47Ω "
R4	" -101	"	100Ω "
R5	" -564	"	560kΩ "
R6	" -122	"	1.2kΩ "
R7,8,9	" -101	"	100Ω "
R10	QRD143K-334	"	330kΩ "
R11	QRD141K-101	"	100Ω "
R12	QRD143K-222	"	2.2kΩ "
R13	" -471	"	470Ω "
R14	" -220	"	22Ω "
R15	QRD141K-332	"	3.3kΩ "
R16	QRD143K-101	"	100Ω "
R17	" -681	"	680Ω "
R18	QRD141K-100	"	10Ω "
R19	QRD143K-682	"	6.8kΩ "
R20	QRD141K-332	"	3.3kΩ "
R21	" -392	"	3.9kΩ "
R22	" -182	"	1.8kΩ "
R23	QRD143K-103	"	10kΩ "
R24	QRD141K-470	"	47Ω "
R25,26	" -104	"	100kΩ "
R27	" -273	"	27kΩ "
R28	" -4R7	"	4.7Ω "
R29	QRD143K-183	"	18kΩ "
R30	" -102	"	1kΩ "
R31	QRD141K-153	"	15kΩ "
R32,33	" -332	"	3.3kΩ "
R34	" -681	"	680Ω "
R35	QRD143K-183	"	18kΩ "
R36	QRD141K-100	"	10Ω "
R37	" -683	"	68kΩ "
R38	" -273	"	27kΩ "
R39	QRD143K-564	"	560kΩ "
R40	" -823	"	82kΩ "
R41	" -681	"	680Ω "
R42	" -822	"	8.2kΩ "
R45	" -152	"	1.5kΩ "
R46	" -222	"	2.2kΩ "
VR1	QVP8A0B-014	Variable	10kΩ B-curve

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C1	QCF11HP-472	Ceramic	4700pF 50V
C2	" -102	"	1000pF "
C3	QCS11HJ-220	"	22pF "
C4,9	" -4R0	"	4pF "
C5	" -100	"	10pF "
C6	" -331	"	330pF "
C7,8	QCF11HP-223	"	0.022μF "
C10,11	QCT05CH-8R0	"	8pF "
C12	" -240	"	24pF "
C13	" -150	"	15pF "
C14	QCS11HJ-300	"	30pF "
C15	QCS11HP-472	"	4700pF "
C16,18	QCS11HJ-390	"	39pF "
C17	" -4R0	"	4pF "
C19	" -100	"	10pF "
C20	" -120	"	12pF "
C21	QFS41HJ-181	Polystyrol	180pF "
C22	QCS11HJ-361	Ceramic	360pF "
C23	QFS21HJ-472	Polystyrol	4700pF "
C24	QCS11HJ-390	Ceramic	39pF "
C25	QCT05YK-3R0	"	3pF "
C27,29	QFM41HM-223	Mylar	0.022μF "
C28	" -473	"	0.047μF "
C30	QCY41HK-682	Ceramic	6800pF "
C31	QCF11HP-473	"	0.047μF "
C32	" -223	"	0.022μF "
C33	QFM41HM-223	Mylar	" "
C34	QCS11HJ-121	Ceramic	120pF "
C35	QET41AR-477	Electrolytic	470μF 10V
C36,37	QFM41HM-473	Mylar	0.047μF 50V
C38	QET41HR-335	Electrolytic	3.3μF "
C39	QET41AR-336	"	33μF 10V
C40	QCF11HP-104	Ceramic	0.1μF 50V
C41	QCS11HJ-301	"	300pF "
C42	QEC41HM-104	Electrolytic	0.1μF "
C43	QFM41HM-473	Mylar	0.047μF "
C44	QFS41HJ-471	Polystyrol	470pF "
C45	QEC41HM-474	Electrolytic	0.47μF "
C46	" -224	"	0.22μF "
C47	QET41HR-474	"	0.47μF "
C48	QCF11HP-223	Ceramic	0.022μF "
C49	QET41CR-106	Electrolytic	10μF 16V
C50	QEW21HA-335	"	3.3μF 50V
C51,52	QFM41HM-153	Mylar	0.015μF "
C53,54	QCY41HK-152	Ceramic	1500pF "
C55,56,57,58	" -332	"	3300pF "
C59,60	QET41ER-475	Electrolytic	4.7μF 25V
C61	QFM41HM-472	Mylar	4700pF 50V
C62	QET41HR-335	Electrolytic	3.3μF "
C63	QCS11HJ-200	Ceramic	20pF "
C64	" -220	"	22pF "
C65	QFM41HM-683	Mylar	0.068μF "
C66	QCS11HJ-100	Ceramic	10pF "
C67	QET41AR-227	Electrolytic	220μF 10V
C68	QCF11HP-223	Ceramic	0.022μF 50V
C69,71,72	QCS11HJ-151	"	150pF "
C70	QFM41HM-223	Mylar	0.022μF "

Ref. No.	Parts No.	Parts Name	Description
C73	QFM41HK-223	Mylar	0.022μF 50V
C76	QCS11HJ-4R0	Ceramic	4pF "
C77	QET41HR-474	Electrolytic	0.47μF "
VC1,2	QAP1224-512	Variable	
TC5-6,7-8	QAT2002-001	Trimmer	

Others

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description
L1	V03105-030	Coil	FM RF
L2	03226-1K	Inductor	FM IF Trap
L3	V03105-029	Coil	FM Osc.
L4,5	*VQB012B-303	Bar Antenna Ass'y	MW & LW
L6	VQR1014-301	Coil	SW Antenna
L7	*VQL1T05-302	"	LW Osc.
L8	QVM1T05-301	"	MW Osc.
L9	VQS1T05-302	"	SW Osc.
L10,11	VQP0002-393	Inductor	
L12	V03047-11	"	
T1,5	VQT7F12-104	I.F.T.	FM
T2,3	V03067-026	"	AM
T4	VQT7F11-202	"	FM
BPF	VBP1M3B-001	Band Pass Filter	FM Antenna
CF1	V03059-014	Ceramic Filter	FM IF
S1	QSSA401-002	Slide Switch	BAND
CN1-P	QMV5005-005	Connector	5-pin
B.T.	VKL3143-001	Board in Tab	
Tab	V43895-1	Tab	

Amplifier Circuit Board Ass'y

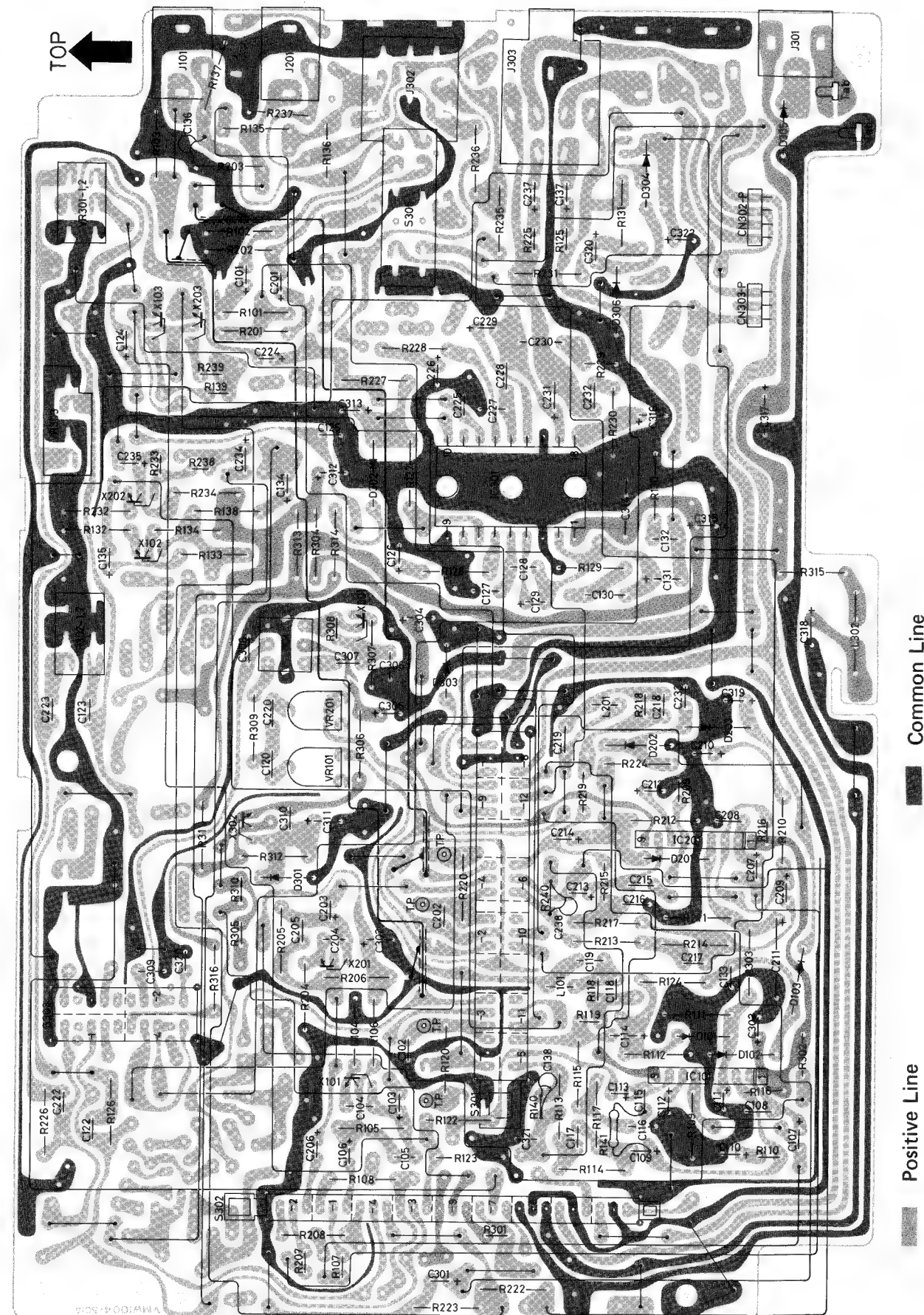


Fig. 32

Note: The circuit board assembly will not be available as spare part.

Transistors

Asterisked parts (*) show new parts

Ref. No.	Parts No.	Description	Pc	fT
X101,201	*2SD661(S)	Silicon (MATSUSHITA)	0.3W	
X102,202,301,302	2SD636(R)	" (")	0.4W	
X103,203	2SD636(S)	" (")	"	

ICs & Diodes

Ref. No.	Parts No.	Parts Name	Description
IC101,201	BA333(V)	Integrated Circuit	TOYO DENGU
IC301	AN7145(M)	"	MATSUSHITA
D101,201	MA150	Silicon Diode	"
D102,103,202,203	OA90	Germanium Diode	"
D301	HZ6B	Zener Diode	HITACHI
D302,304,306	OA90	Germanium Diode	MATSUSHITA
D303	MA150	Silicon Diode	"
D305	10E1	"	J.I.R.C.

Resistors

Ref. No.	Parts No.	Parts Name	Description
R101,201	QRD141K-222	Carbon	2.2k Ω 1/4W
R102,202	" -102	"	1k Ω "
R103,203	" -103	"	10k Ω "
R104,204	" -471	"	470 Ω "
R105,205	" -225	"	2.2M Ω "
R106,206	" -153	"	15k Ω "
R107,207	QRD143K-272	"	2.7k Ω "
R108,208	QRD141K-104	"	100k Ω "
R109	" -333	"	33k Ω "
R110	QRD143K-101	"	100 Ω "
R111,211	QRD121J-106	"	10M Ω 1/2W
R112,212	QRD141K-393	"	39k Ω 1/4W
R113,213	" -822	"	8.2k Ω "
R114,214	" -224	"	220k Ω "
R115	" -682	"	6.8k Ω "
R116,216	QRD143K-474	"	470k Ω "
R117,217	QRD141K-822	"	8.2k Ω "
R118,218	QRD143K-223	"	22k Ω "
R119,219	" -561	"	560 Ω "
R120,220	QRD141K-100	"	10 Ω "
R122,222	" -683	"	68k Ω "
R123,223	" -822	"	8.2k Ω "
R124,224	" -272	"	2.7k Ω "
R125,225	QRD143K-101	"	100 Ω "
R126,226	QRD141K-103	"	10k Ω "
R127,227	" -473	"	47k Ω "
R128,228	" -820	"	82 Ω "
R129,130,229,230	QRD121J-2R2	"	2.2 Ω 1/2W
R131,231	QRD141K-332	"	3.3k Ω 1/4W
R132,232	" -101	"	100 Ω "
R133	" -155	"	1.5M Ω "
R134,234	" -682	"	6.8k Ω "
R135,235	" -103	"	10k Ω "
R136	QRD143K-105	"	1M Ω "
R137	" -152	"	1.5k Ω "
R138	QRD141K-683	"	68k Ω "
R139,239	QRD143K-333	"	33k Ω "
R140,240	" -224	"	220k Ω "
R141	" -472	"	4.7k Ω "
R209	" -333	"	33k Ω "
R210	QRD141K-101	"	100 Ω "

Ref. No.	Parts No.	Parts Name	Description
R215	QRD143K-682	Carbon	6.8k Ω 1/4W
R233	" -155	"	1.5M Ω "
R236	QRD141K-105	"	1M Ω "
R237	" -152	"	1.5k Ω "
R238	QRD143K-683	"	68k Ω "
R301,302	" -102	"	1k Ω "
R303	QRD141K-564	"	560k Ω "
R304	" -151	"	150 Ω "
R305	QRD143K-121	"	120 Ω "
R306	QRD146K-330	"	33 Ω "
R307	" -150	"	15 Ω "
R308	QRD143K-333	"	33k Ω "
R309	QRD141K-822	"	8.2k Ω "
R310	QRD146K-4R7	"	4.7 Ω "
R311	" -100	"	10 Ω "
R312	QRD141K-331	"	330 Ω "
R313	" -221	"	220 Ω "
R314	" -471	"	470 Ω "
R315	QRD121J-1R0	"	1 Ω 1/2W
R316	QRD141K-473	"	47k Ω 1/4W
VR101,201	QVP8A0B-054	Variable	50k Ω , B-curve
VR301	QVD8A2B-024VM	"	20k Ω , " (VOLUME)
VR302	QVD7A2A-024VM	"	" A-curve (TONE)
VR303	QVG4A2W-A54VM	"	50k Ω W-curve (BALANCE)

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C101,201	QET41HR-474	Electrolytic	0.47 μ F 50V
C102,202	QCY41HK-681	Ceramic	680pF "
C103,203	QEB41EM-105N	Electrolytic	1 μ F 25V
C104,204	QCF11HP-102	Ceramic	1000pF 50V
C105,205	QCS11HK-330	"	33pF "
C106,107,206,207	QET41HR-474	Electrolytic	0.47 μ F "
C108,208	QCY41HK-102	Ceramic	1000pF "
C109,209	QET41CR-106	Electrolytic	10 μ F 16V
C110,210	QET41AR-336	"	33 μ F 10V
C111	QET41ER-475	"	4.7 μ F 25V
C112,212	QET41AR-476	"	47 μ F 10V
C113,213	QET41ER-475	"	4.7 μ F 25V
C114,214	QEB41EM-105N	"	1 μ F "
C115	QCS11HJ-451	Ceramic	450pF 50V
C116,216	QCY41HK-332	"	3300pF "
C117,217	QFM41HK-153	Mylar	0.015 μ F "
C118,218	QFM41HJ-182	"	1800pF "
C119,219	QCS11HJ-501	Ceramic	500pF "
C120,220	QCS11HK-331	"	330pF "
C122,222	QCY41HK-472	"	4700pF "
C123,223	QFM41HK-333	Mylar	0.033 μ F "
C124,224	QEC41HM-224	Electrolytic	0.22 μ F "
C125,225	QCY41HK-681	Ceramic	680pF "
C126,226	QET41AR-476	Electrolytic	47 μ F 10V
C127,227	QCS11HK-331	Ceramic	330pF 50V
C128,228	" -101	"	100pF "
C129,229	QET41AR-107	Electrolytic	100 μ F 10V

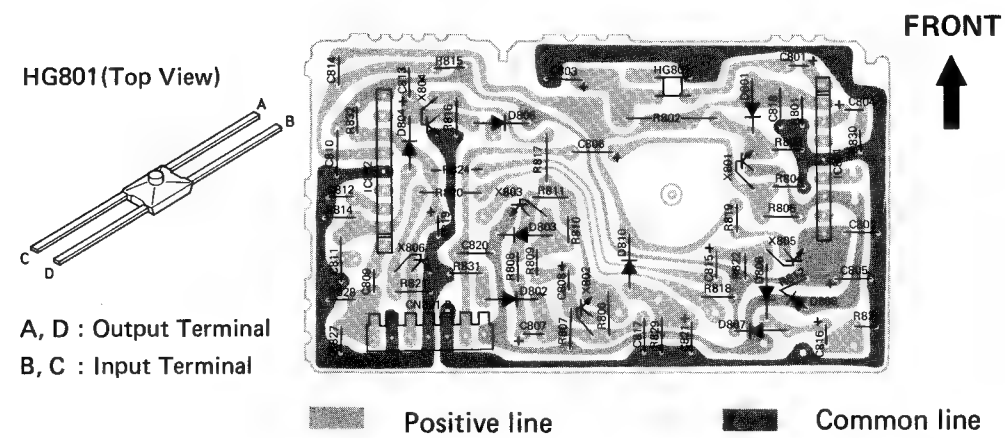
Ref. No.	Parts No.	Parts Name	Description
C130,230	QFM41HM-104	Mylar	0.1 μ F 50V
C131,231	QET41AR-477	Electrolytic	470 μ F 10V
C132,232	QFM41HK-683	Mylar	0.068 μ F 50V
C133,233	QCF11HP-103	Ceramic	0.01 μ F "
C134,234	QET41HR-474	Electrolytic	0.47 μ F "
C135,235	QET41ER-475	"	4.7 μ F 25V
C136	QCY41HK-152	Ceramic	1500pF 50V
C137,237	QET41HR-335	Electrolytic	3.3 μ F "
C138,238	QCS11HJ-101	Ceramic	100pF "
C211	QEW21EA-475	Electrolytic	4.7 μ F 25V
C215	QCS11HK-151	Ceramic	150pF 50V
C301	QET41AR-107	Electrolytic	100 μ F 10V
C302	" -337	"	330 μ F "
C303,305	" -227	"	220 μ F "
C304	" -477	"	470 μ F "
C306,310	QFM41HK-223	Mylar	0.022 μ F 50V
C307	" -222	"	2200pF "
C308	QCY41HK-681	Ceramic	680pF "
C309	QCS11HJ-301	"	300pF "
C311	QET41AR-337	Electrolytic	330 μ F 10V
C312	QET41CR-108	"	1000 μ F 16V
C313	QET41AR-107	"	100 μ F 10V
C314	QFM41HM-224	Mylar	0.22 μ F 50V
C315	QET41HR-474	Electrolytic	0.47 μ F "
C316	QET41CR-227	"	220 μ F 16V
C317	" -228	"	2200 μ F "
C318	" -477	"	470 μ F "
C319	" -106	"	10 μ F "
C320	QCS11HJ-181	Ceramic	180pF 50V
C321	QCS11HK-151	"	150pF "
C322	QET41HR-105	Electrolytic	1 μ F "
C324	" -474	"	0.47 μ F "

Others

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description
L101 201	QVP0002-103	Inductor	10mH Bias Trap
L301	V03083-020	Coil	Bias Osc.
L302	T41572-001	Inductor	Choke
S301-1~12	QSSC201-106	Slide Switch	RECORD-PLAY
S302-1~9	QSS9201-002	"	FUNCTION
S303-1~3	QSS4301-021	"	MODE
S305	QSP4210-061	Push Switch	DIN
J101,201	QMS3501-014	Jack Ass'y	MIC
J102,202	*VMJ4008-001	Jack Board Ass'y	External Speaker
J301	QMA0921-005	Jack Ass'y	DC 9V
J302	QMC9014-006	DIN Jack	
J303	QMS6312-004	Headphone Jack	
CN302-P	QMV5004-004	Connector	4-pin (for speakers)
CN303-P	" -003	"	3-pin (for meter)
Tab	V43895-1	Tab	
T.P	A74138-2	Test Pin	
	*VYH4295-002	Radiation	Heat Sink for IC301

Auto Stop Circuit Board Ass'y



Note: The circuit board assembly will not be available as spare part.

Fig. 33

Transistors

Ref. No.	Parts No.	Description	Pc	fT
X801	2SC1317(Q,R)	Silicon (MATSUSHITA)	0.4W	200MHz
X802,804,806	2SC828(Q,R)	" (")	0.25W	220MHz
X803,805	2SA564(R)	" (")	"	80MHz

ICs & Diodes

Ref. No.	Parts No.	Parts Name	Description
IC801,802	BA335	Integrated Circuit	TOYO DENGU
D801~808,810	1S2076	Silicon Diode	HITACHI

Resistors

Ref. No.	Parts No.	Parts Name	Description
R801	QRD143K-154	Carbon	150kΩ 1/4W
R802	QRD141K-331	"	330Ω "
R803	QRD143K-103	"	10kΩ "
R804	" -123	"	12kΩ "
R805,806,807,808	" -103	"	10kΩ "
R809	" -221	"	220Ω "
R810	" -223	"	22kΩ "
R811	" -331	"	330Ω "
R812	QRD141K-560	"	56Ω "
R814	QRD143K-474	"	470kΩ "
R815	" -222	"	2.2kΩ "
R816	" -223	"	22kΩ "
R817	" -104	"	100kΩ "
R818	" -103	"	10kΩ "
R819	" -101	"	100Ω "
R820	" -273	"	27kΩ "
R821	" -223	"	22kΩ "
R822	" -103	"	10kΩ "
R823,824,825	" -272	"	2.7kΩ "
R827	" -222	"	2.2kΩ "
R828	" -472	"	4.7kΩ "
R829	" -152	"	1.5kΩ "
R830	" -331	"	330Ω "
R831	" -472	"	4.7kΩ "

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C801	QET41HR-105	Electrolytic	1μF 50V
C802	QCF11HP-103	Ceramic	0.01μF "
C803	QET41AR-477	Electrolytic	470μF 10V
C804	" -336	"	33μF "
C805	" -477	"	470μF "
C806	QET41CR-227	"	220μF 16V
C807,808	" -106	"	10μF "
C809	QFM41HJ-102	Mylar	1000pF 50V
C810	QFM41HM-473	"	0.047μF "
C811	QFM41HJ-563	"	0.056μF "
C812	QFM41HM-223	"	0.022μF "
C813	QET41CR-106	Electrolytic	10μF 16V
C814	QEN41CA-106	"	" "
C815	QET41HR-335	"	3.3μF 50V
C816	QET41AR-476	"	47μF 10V
C817,818	QCF11HP-103	Ceramic	0.01μF 50V
C819	QET41CR-106	Electrolytic	10μF 16V
C820	QCF11HP-223	Ceramic	0.022μF 50V
C821	QET41AR-107	Electrolytic	100μF 10V

Others

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description
HG801	*VHE610G	Hall Element	JVC
CN801-P	QMV5005-007	Connector	7-pin

Notice: The diode D808 will be deleted in the midway of production.

MMS Indicator Circuit Board Ass'y

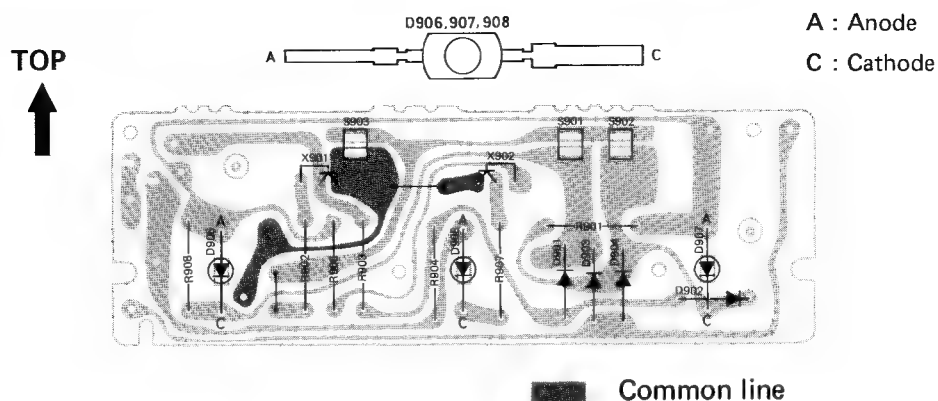


Fig. 34

Note: The circuit board assembly will not be available as spare part.

Transistors

Ref. No.	Parts No.	Description	Pc	ft
X901,902	2SD636(R)	Silicon (MATSUSHITA)	0.4W	

Diodes

Ref. No.	Parts No.	Parts Name	Description
D901,902,903,904 D906,907,908	1S2076 TLR122	Silicon Light Emitting	HITACHI TOSHIBA

Resistors

Ref. No.	Parts No.	Parts Name	Description
R901	QRD141K-102	Carbon	1k Ω 1/4W
R902	" -104	"	100k Ω "
R903	" -182	"	1.8k Ω "
R904	" -102	"	1k Ω "
R906	" -333	"	33k Ω "
R907	" -221	"	220 Ω "
R908	" -102	"	1k Ω "

Switches

Ref. No.	Parts No.	Parts Name	Description
S901	VSH1106-001	Leaf	CUE
S902	"	"	REVIEW
S903	"	"	PLAY

Switch Circuit Board Ass'y

A. REC MUTE Switch

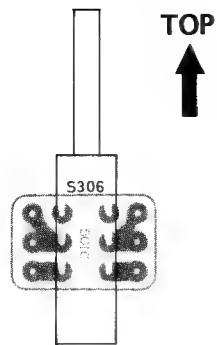


Fig. 35

B. SCAN Switch

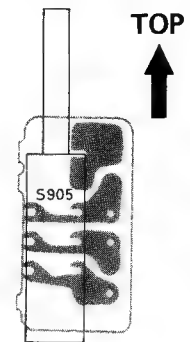


Fig. 36

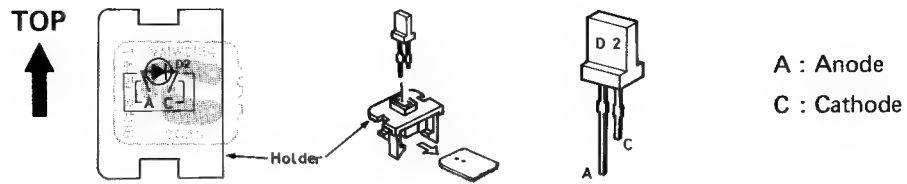
Note: The circuit board assembly will not be available as spare part.

Switches

Ref. No.	Parts No.	Parts Name	Description
S306	QSP2210-007	Push Switch	REC MUTE
S905	QSP2210-008	"	SCAN

LED Circuit Board Ass'y

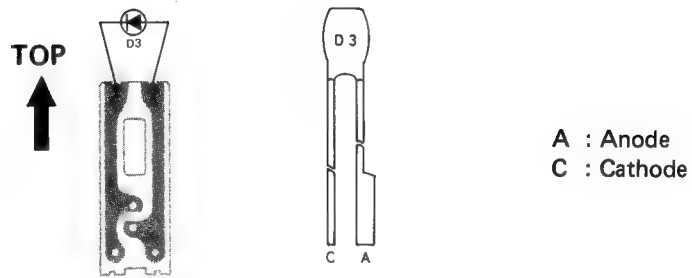
A. FM Stereo Indicator



A : Anode
C : Cathode

Fig. 37

B. Tuning Indicator



A : Anode
C : Cathode

Fig. 38

Note: The circuit board assembly will not be available as spare part.

Diodes

Ref. No.	Parts No.	Parts Name	Description
D2	LN217RP	Light Emitting (LED)	MATSUSHITA
D3	SLP-104A	" (")	SANYO

— Continued from page 31 —

Ref. No.	Parts No.	Parts Name	Description	Q'ty
111	13341603T	Counter Bracket		1
112	SSSB2608Z	Tapping Screw		2
113	SPSD2604Z	TH Tapping Screw		7
114	8001602T	Counter Belt		1
115	*13361303T	Side Bracket (1)		1
116	4660901T	Cord Clamp		3
117	*13361381ZT	Eject Bracket Ass'y		1
118	581205T	Spring		2
119	13341302T	Eject Lever		1
120	SPSD2606Z	TH Tapping Screw		2
121	SPSD3010Z	"		1
122	13350211T	Pause Lever Bracket		1
123	13350295T	Special Screw	φ 2 x L 5	1
124	13350217T	Collar		1
125	13350218T	Spring		1
126	10411481ZT	Arm Ass'y		1
127	8781685ZT	Plunger Ass'y		1
128	LPSP2004Z	Ass'y Screw		4
129	13351702T	Bracket (R)		1
130	8781612T	Auto Lever Plate		1
131	8781613T	Collar		2
132	SDSP2004Z	Screw		2
133	8781611T	P.B. Stud		1
134	SDSP2605Z	Screw		1
135	10631781ZT	Pause Plate Ass'y		1
136	8781704T	Spring		1
137	13351704T	"		1
138	13351705T	Collar		1
139	*13360301T	Record Spring Plate		1
140	*13361302T	Side Bracket (2)		1
141	7081302T	Collar		1
142	SSSP2005Z	Screw		1
143	SPSD3005Z	TH Tapping Screw		

Connector Circuit Board Ass'y

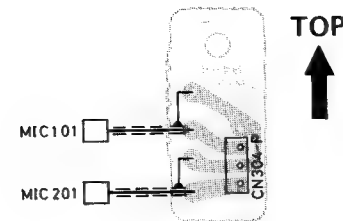


Fig. 39

Note: The circuit board assembly will not be available as spare part.

Ref. No.	Parts No.	Parts Name	Description
CN304-P MIC101,201	QMV5005-003 VMME62N-023	Connector Condenser Microphone	3-pin

Power Supply Circuit Board Ass'y

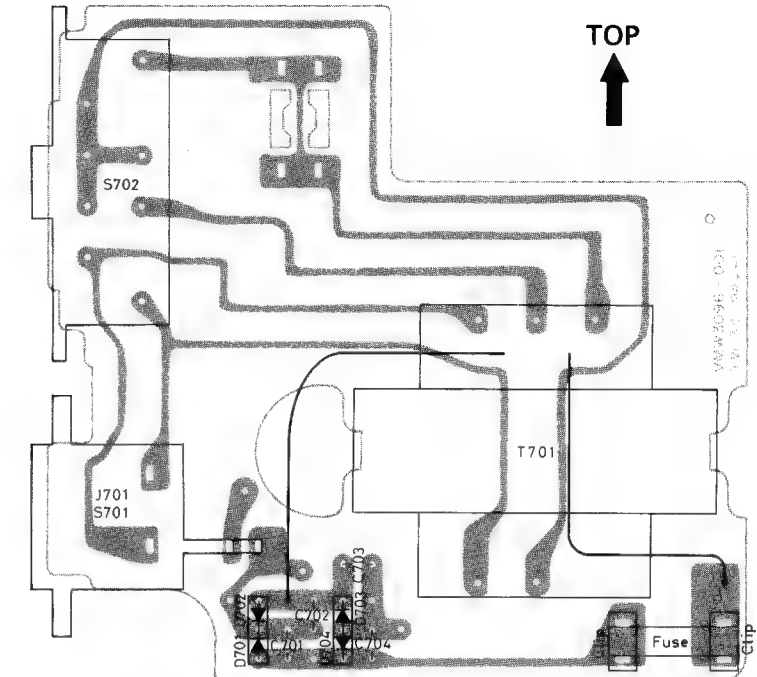


Fig. 40

Note: The circuit board assembly will not be available as spare part.

Diodes

Ref. No.	Parts No.	Parts Name	Description
D701,702 D703,704	DS131A DS132A	Silicon (SANYO) " (")	Rectifier Stack "

Capacitors

Ref. No.	Parts No.	Parts Name	Description
C701,702,703,704	QCF11HP-103	Ceramic	0.01 μ F 50V

Others

Ref. No.	Parts No.	Parts Name	Description
S701,J701	QMC0263-002	AC Socket Ass'y	⚠ for RC-646L
"	QMC0263-002BS	"	⚠ for RC-646LB
S702	QSS2325-101	Slide Switch	⚠ for RC-646L
"	QSS2325-101BS	"	⚠ for RC-646LB
T701	VTP48N2-90F	Power Transformer	⚠ for RC-646L
"	VTP48N2-90FBS	"	⚠ for RC-646LB
Clip	A44594-001	Fuse Clip	
Fuse	QMF51A2-1R0	Fuse	⚠ for RC-646L
"	QMF51A2-1R0BS	"	⚠ for RC-646LB

Note: The parts marked ⚠ are the important parts for safety assurance.
Use the specified part, when replacing the safety assurance part, never use an equivalent one.

Exploded View of Cassette Mechanism

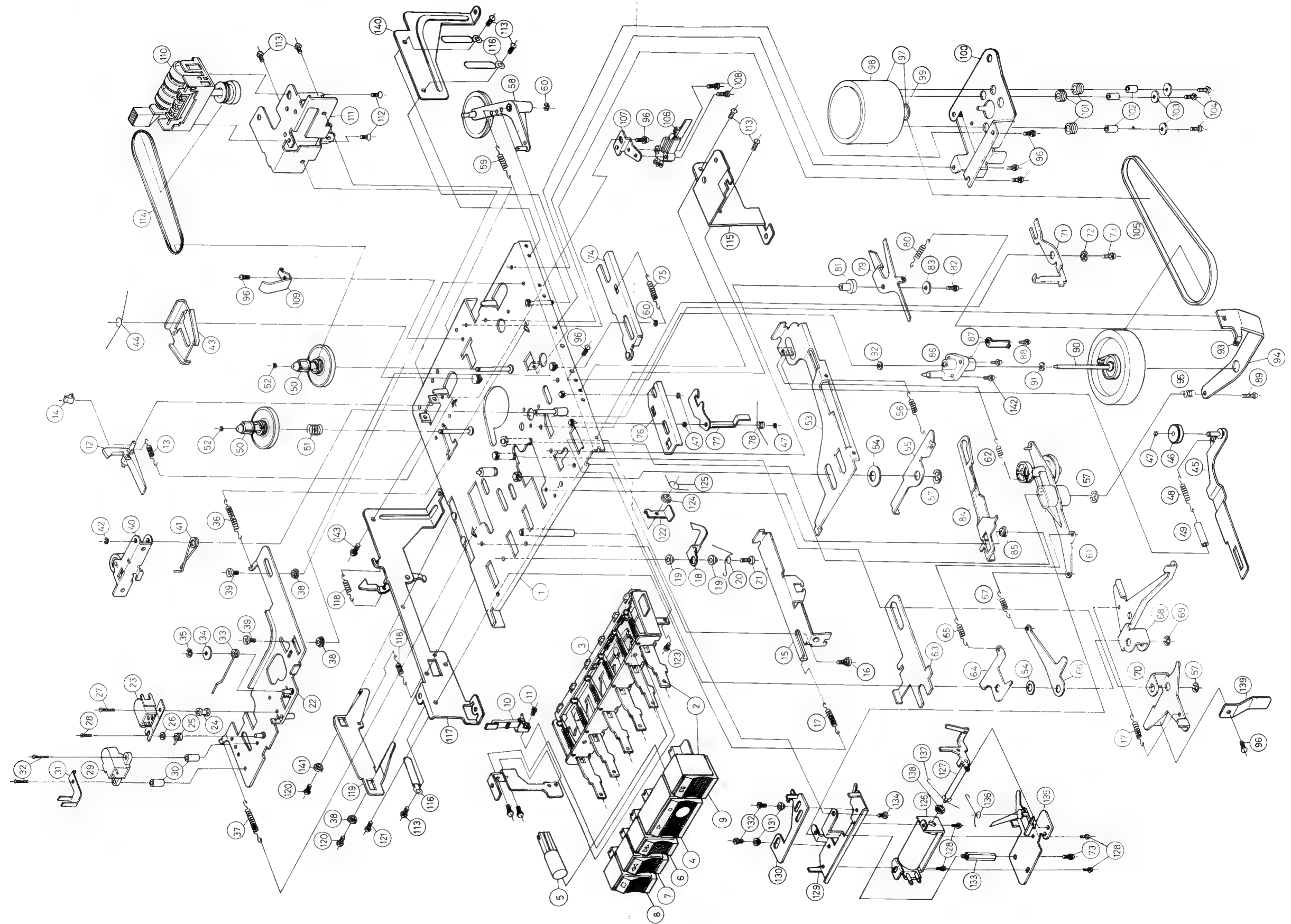


Fig. 41

List of Cassette Mechanism

Asterisked parts (*) show new parts

Ref. No.	Parts No.	Parts Name	Description	Q'ty
1	13340182ZT	Chassis		1
2	*13360291ZT	Push Switch Composite Ass'y		1
3	13350292ZT	Push Button Switch Ass'y		1
4	*VXP3028-001	Push Button	PLAY	1
5	*VXP3029-001	"	RECORD	1
6	*VXP3030-001	"	CUE	1
7	*VXP3030-002	"	REVIEW	1
8	*VXP3030-003	"	STOP	1
9	*VXP3030-004	"	PAUSE	1
10	13350216T	Leaf Switch	S904 (PAUSE)	1
11	SPSP2605Z	Screw		1
12	2680503T	Record Safety Lever		1
13	1320303T	Spring		1
14	2680515T	Stopper		1
15	13340301T	Record Slide Lever		1
16	11050202T	Collar Screw B		1
17	581308T	Spring		2
18	13340302T	Stopper V		1
19	030304T	Collar		2
20	13340306T	Spring		1
21	SDSP2608Z	Screw		1
22	13350482ZT	Head Panel Ass'y		1
23	V03078-043	Play/Record Head		1
24	4080402T	Collar		1
25	480408T	Spring		1
26	WSS2000Z	Washer		1
27	SPSP2011Z	Screw		1
28	SPSX2006Z	"		1
29	V03078-041	Erase Head		1
30	4630402T	Stud		2
31	4080430T	Wire Clamp		1
32	SPSP2012Z	Screw		2
33	11340801T	RQ Spring		1
34		Special Washer	$\phi 3.3 \times \phi 8 \times t 1.5$	1
35	REE2500	E-Ring		1
36	4080413T	Spring		1
37	180606T	"		1
38	4080411T	Collar		3
39	SDSP2604Z	Screw		2
40	8290481ZT	Pinch Roller Ass'y		1
41	6680501T	Pinch Roller Spring		1
42	REE1900	E-Ring		1
43	4080901T	Brake Arm		1
44	8200902T	Spring		1
45	9701081ZT	Rewind Idler Arm Ass'y		1
46	2110902T	Rewind Idler		1
47	REE1500	E-Ring		4
48	020905BT	Spring		1
49		Tube	$\phi 3.5 \times L 24$	1
50	5720695ZT	Reel Disk Ass'y	Take-up, Supply	2
51	040508T	Spring	Back Tension	1
52	REE1200	E-Ring		2
53	4080903T	Brake Function Plate		1
54	110505T	Special Washer	$\phi 6.1 \times \phi 10 \times t 0.5$	2
55	4080807T	RQ Lever		1

Ref. No.	Parts No.	Parts Name	Description	Q'ty
56	5580211T	Spring		1
57	REE4000	E-Ring		2
58	12380791ZT	Clutch Ass'y		1
59	2380406T	Spring		1
60	REE2000	E-Ring		2
61	13350891ZT	FF Idler Ass'y		1
62	581316T	Spring		1
63	11820806T	RQ Function Plate		1
64	13350801T	Rewind Function Plate		1
65	8780803T	Spring		1
66	4080804T	FF Function Plate		1
67	8780803T	Spring		1
68	13340304T	Record Lever		1
69	REE3000	E-Ring		2
70	13340305T	Record Kick Lever		1
71	4081503T	Arm Lever		1
72	2381304T	Collar		1
73	LPSP2605Z	Ass'y Scw		2
74	4081581ZT	Slide Lever Ass'y		1
75	4081510T	Slide Lever Spring		1
76	5581681ZT	Pause Slide Lever Ass'y		1
77	8781401T	Pause Lever		1
78	5421803T	Pause Spring		1
79	4081405T	Auto Lever		1
80	2980802T	Spring		1
81	13341401T	Collar		1
82	LPSP2607Z	Ass'y Screw		1
83	7061501T	Special Washer		1
84	13340209T	Record/Play Slide Lever		1
85	090302T	Collar		1
86	3690701T	Flywheel Block		1
87	4460701T	Earth Plate		1
88	SPSP2005Z	Screw		2
89	SPSP2614Z	"		1
90	10631101ZT	Flywheel Ass'y		1
91	031503T	Special Washer		1
92	4081120T	"		1
93	10181102T	Flywheel Bracket		1
94	6300902T	Spacer		1
95	580210T	Spring		1
96	LPSP2604Z	Ass'y Screw		7
97	*13351295ZT	Motor Ass'y	with Pulley	1
98	MHI-5F9CLN	Motor		1
99	12381201T	Motor Pulley		1
100	8201201T	Motor Bracket		1
101	T45687-001	Rubber Cushion		3
102	4081211T	Collar		3
103	031512T	Washer		3
104	SPSP2607Z	Screw		3
105	9731201CT	Main Belt		1
106	6251804T	Main Switch		1
107	11351801T	Switch Bracket		1
108	SDSP2008Z	Screw		2
109	6010101T	Pack Spring		1
110	VKC5119-002T	Tape Counter		1

— Continued on page 28 —

Exploded View of Amplifier Section

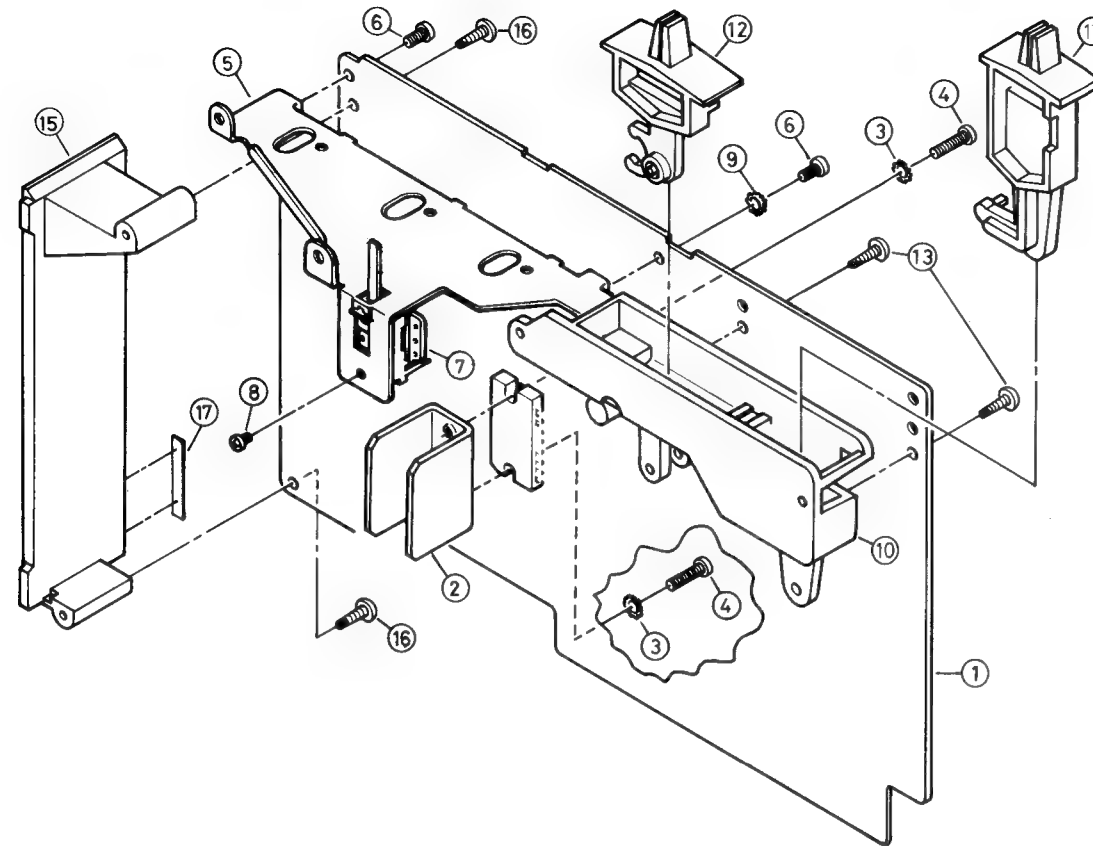


Fig. 42

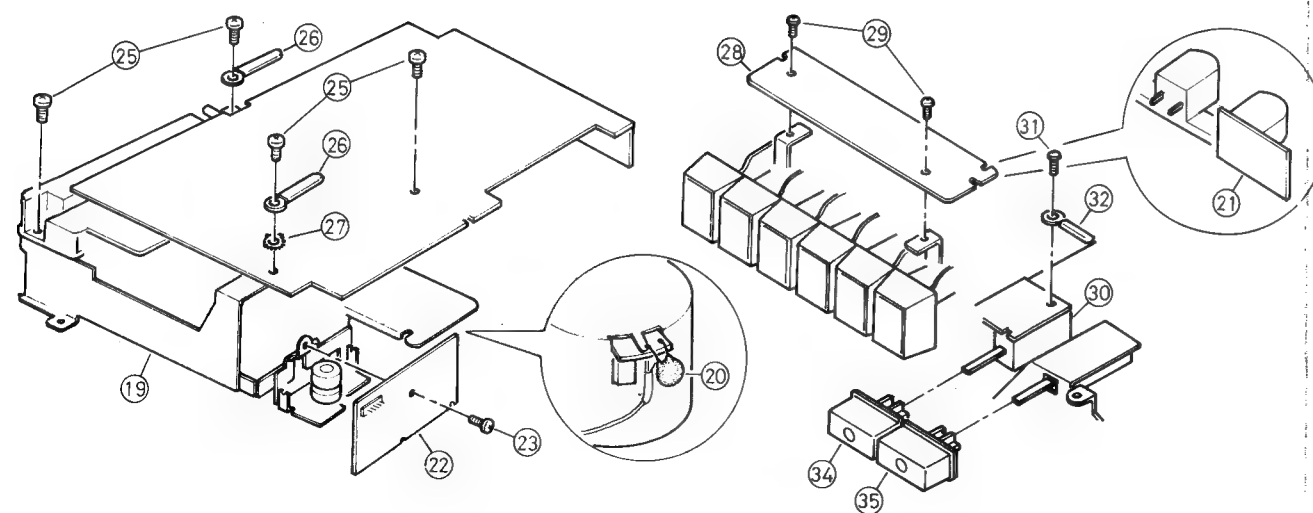


Fig. 43

Asterisked parts (*) show new parts

Ref. No.	Parts No.	Parts Name	Description	Q'ty
1	*	Circuit Board Ass'y	Amplifier	1
2	VYH4295-002	Radiation	Heat Sink	1
3	WBS3000	Toothed Lock Washer		2
4	SPSP3012ZS	Screw		2
5	*VYH4318-001	Volume Bracket		1
6	SPSP3006ZS	Screw		2
7	*	Circuit Board Ass'y	REC MUTE	1
8	SPSP2603Z	Screw		1
9	WBS3000	Toothed Lock Washer		1
10	VYH3144-001	Holder		1
11	VXQ3019-001	Toggle Lever	FUNCTION	1
12	VXQ3020-002	"	MODE	1
13	SBSB3010Z	Tapping Screw		2
14			Blank No.	
15	*VMJ4008-001	Jack Board Ass'y		1
16	SBSB3012Z	Tapping Screw		2
17	VYSA101-003	Spacer	Glued (Sticker)	1
18			Blank No.	
19	*	Cassette Mechanism Ass'y		1
20	QCS11HJ-301	Ceramic Capacitor	C323 (300pF, 50V)	1
21	VMW3035-201	Printed Circuit Board	for Play/Record Head	1
22	*	Circuit Board Ass'y	Auto Stop	1
23	SPSP2606Z	Screw		1
24			Blank No.	
25	SPSP3006VS	Screw		4
26	VKZ4001-007	Wire Holder		2
27	WBS3000	Toothed Lock Washer		1
28	*	Circuit Board Ass'y	MMS Indicator	1
29	SPSP2606Z	Screw		2
30	*	Circuit Board Ass'y	SCAN Switch	1
31	SPSP2604Z	Screw		1
32	VKZ4001-007	Wire Holder		1
33			Blank No.	
34	*VXP4034-001	Knob	SCAN (Green Circle)	1
35	*VXP4034-002	"	REC MUTE (Red Circle)	1

Exploded View of Chassis Ass'y

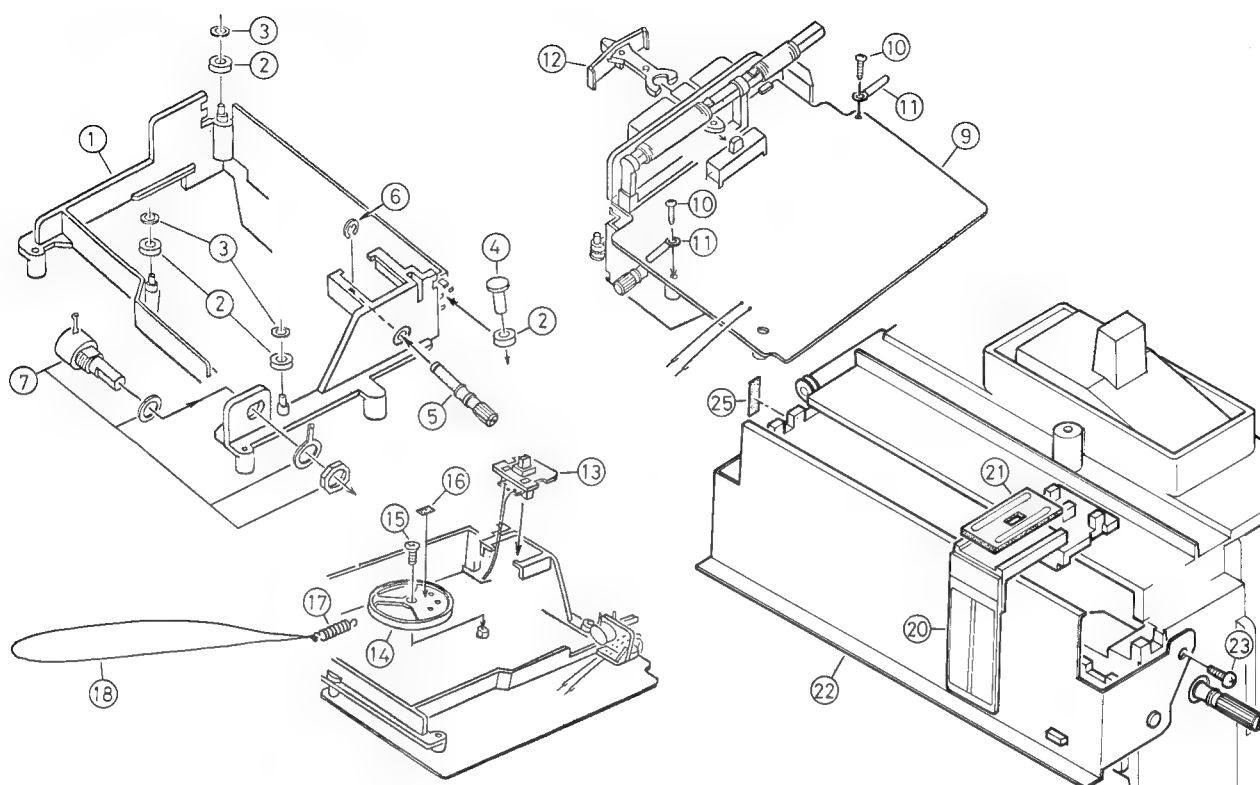


Fig. 44

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description	Q'ty
1	*VYH2111-003	Chassis Base		1
2	VYH4002-001	Roller		4
3	V42562-1	Special Washer		3
4	RTA4008	Rivet		1
5	V41336-13	Tuning Shaft		1
6	REE3000	E-Ring		1
7	*QAT5001-203	Midget Variable Capacitor	VC3 (Fine Tuning)	1
8			Blank No.	
9	*	Circuit Board Ass'y	Tuner	1
10	SBSB3010Z	Tapping Screw		2
11	VKZ4001-007	Wire Holder		2
12	*VXQ3018-002	Toggle Lever	BAND Selector	1
13	*	Circuit Board Ass'y	LED	1
14	QZD1108-002	Dial Drum		1
15	SSSP2608Z	Screw		1
16	VYSA1R6-021	Spacer	Glued (Sticker)	1
17	50153-3	Spring		1
18	VHR2TT9-06A	Dial Cord		1
19			Blank No.	
20	*VJN4023-00B	Needle Ass'y	with LED (D3)	1
21	VMW3095-002A	Printed Circuit Board		1
22	*VJK3120-005	Dial Scale		1
23	SBSB3008Z	Tapping Screw		1
24			Blank No.	
25	VYSA101-003	Spacer	Glued (Sticker)	1

Exploded View of Front Cabinet

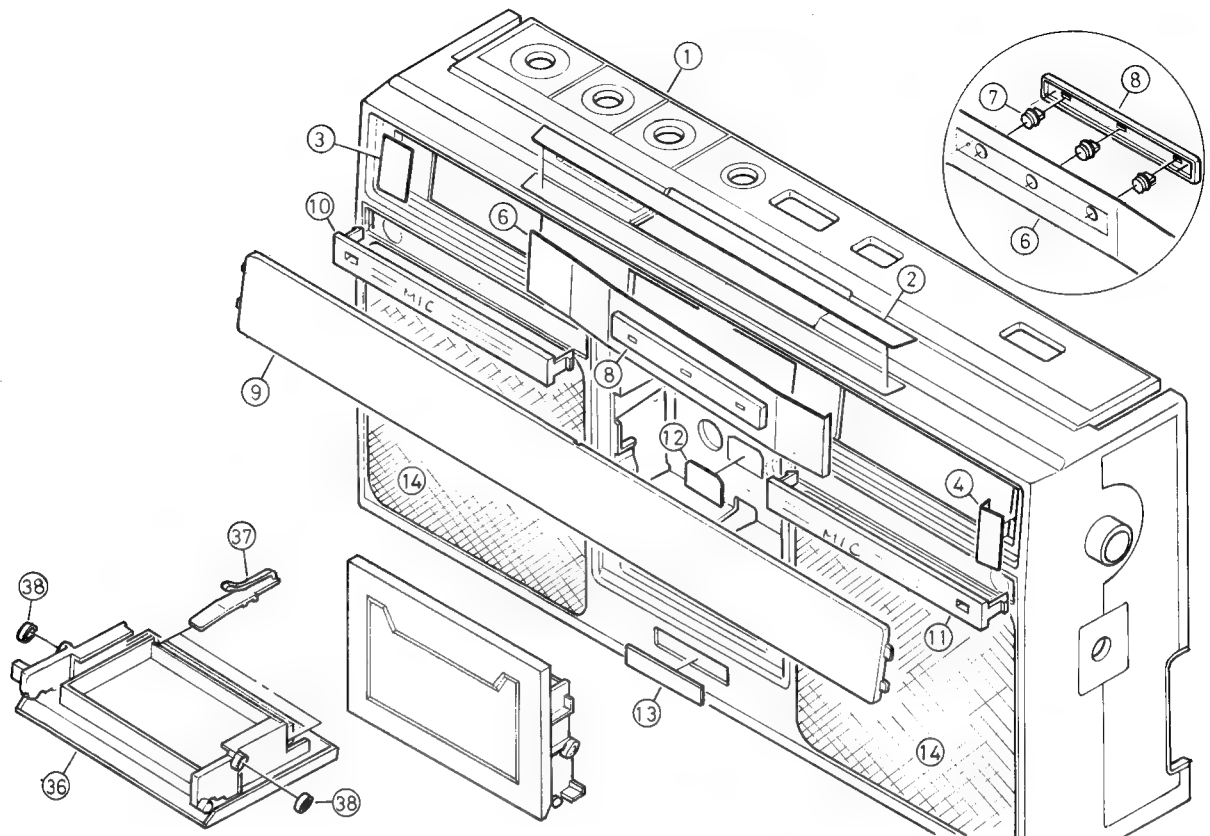


Fig. 45

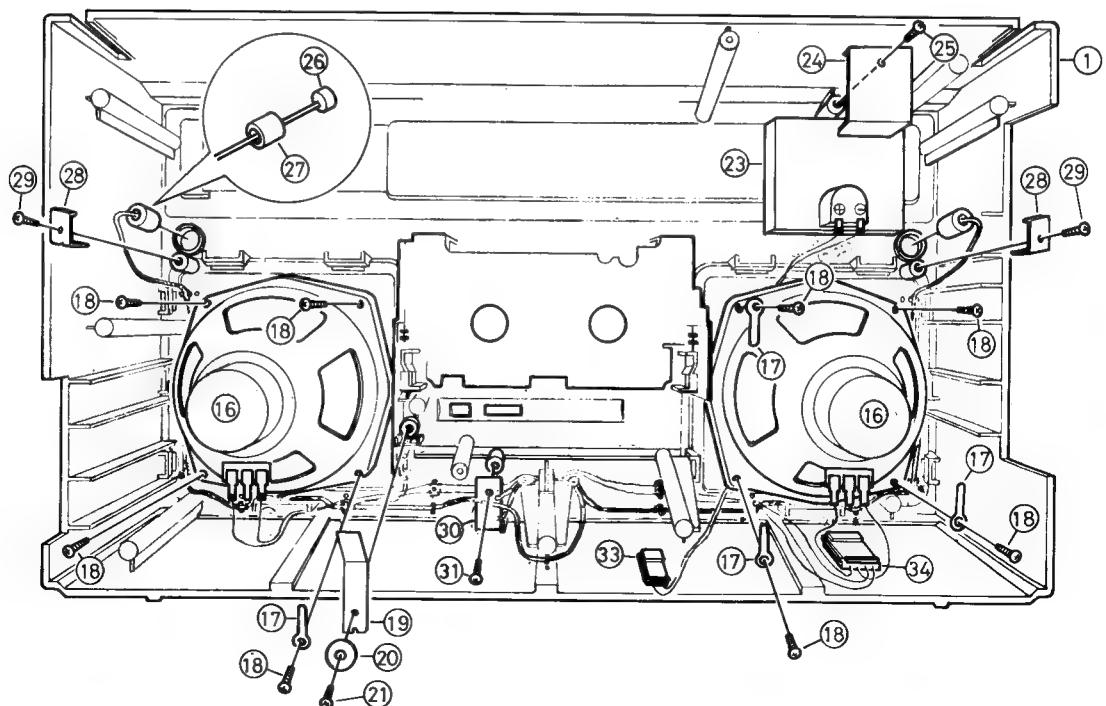


Fig. 46

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description	Q'ty
1~14	*ZCRC646L-CBF	Front Cabinet Ass'y		1
1	*VJC1067-002	Front Cabinet		1
2	*VJD4264-002	Mecha. Plate	Glued	1
3	*VJD4267-002	Plate (B)	"	1
4	*VJD4266-002	Plate (A)	"	1
5			Blank No.	
6	*VJD4265-005	MMS Plate	Glued	1
7	*VJD4255-001	LED Lens	"	3
8	*VJD4251-002	MMS Escutcheon		1
9	*VJK3121-002	Dial Lens	Glued	1
10	*VJD4268-002	Microphone Plate	"	1
11	*VJD4270-002	"	"	1
12	V44957-001	Reflection Plate	" (Sticker)	1
13	QXM2251-001	Mark Plate	"	1
14	*VJD3170-001	Lath Metal (Mesh)	"	2
15			Blank No.	
16	EAS-12P126SH	Speaker		2
17	VKZ4001-007	Wire Holder		4
18	SBSB3008Z	Tapping Screw		8
19	VKY4136-001	Door Spring		1
20	Q03091-109	Washer		1
21	SBSB3008Z	Tapping Screw		1
22			Blank No.	
23	*VGM0120-007T	Indicator	(or VGM0120-007)	1
24	*VYH4316-001	Clamp		1
25	SBSB3010Z	Tapping Screw		1
26	VMME62N-023	Condenser Microphone		2
27	VYH4102-001	Microphone Bushing		2
28	T48216-001	Holder		2
29	SBSB3008Z	Tapping Screw		2
30	* ———	Circuit Board Ass'y	Connector	1
31	SBSB3010Z	Tapping Screw		1
32			Blank No.	
33	*VDM5051-003-005	Connector & Wire Ass'y	CN303-S	1
34	*VDM5051-003-004	"	CN302-S	1
35			Blank No.	
36~38	*ZCRC646-CCA	Cassette Case Ass'y		1
36	*VJT3035-00A	Cassette Case		1
37	V44910-002	Cassette Spring		2
38	VYH4275-002	Rubber Ring	Glued	2

Exploded View of Rear Cabinet (RC-646L)

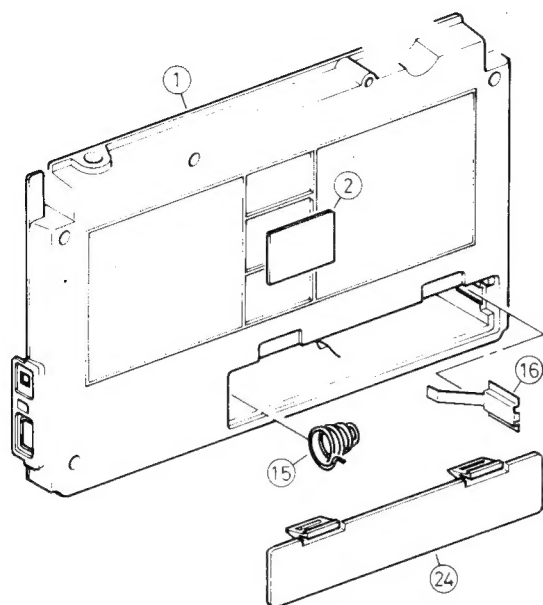


Fig. 47

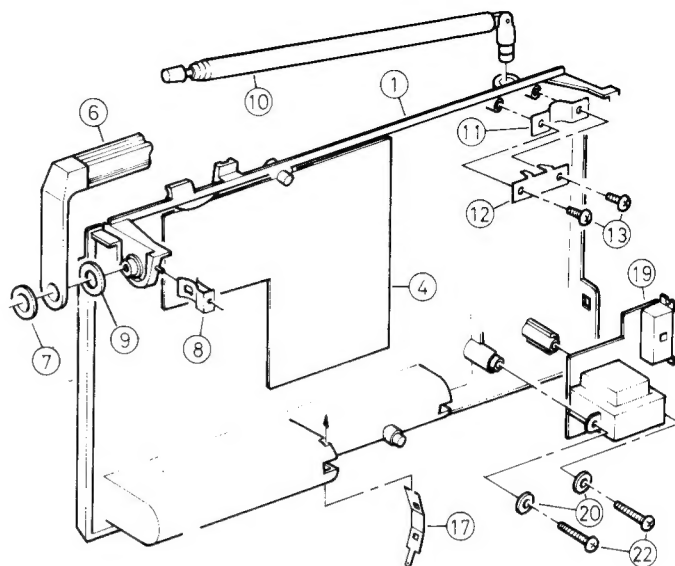


Fig. 48

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description	Q'ty
1~4	*ZCRC646L-CBR	Rear Cabinet Ass'y		1
1	VJC1057-001	Rear Cabinet		1
2	*VYN5051-004C	Name Plate	Glued	1
3			Blank No.	1
4	*VYH4300-00B	Shield Ass'y	Glued	1
5				
6	VJH4011-00A	Handle	Blank No.	1
7	Q03095-236	Washer		2
8	VKY4154-001	Spring		2
9	Q03093-521	Washer		2
10	QZR4333-001	Rod Antenna		1
11	V44195-002	Rod Antenna Holder (A)		1
12	VYH4189-001	" (B)		1
13	SBSB3008Z	Tapping Screw		2
14			Blank No.	
15	53738-1	Battery Spring		1
16	VYH4104-002	Contact		1
17	VYH4010-003	"		1
18			Blank No.	
19	*	Circuit Board Ass'y	Power Supply	1
20	Q03091-138	Washer		2
21			Blank No.	
22	SBSB3014C	Tapping Screw		2
23			Blank No.	
24	*ZCRC646-BCA	Battery Cover Ass'y		1

Exploded View of Rear Cabinet (RC-646LB)

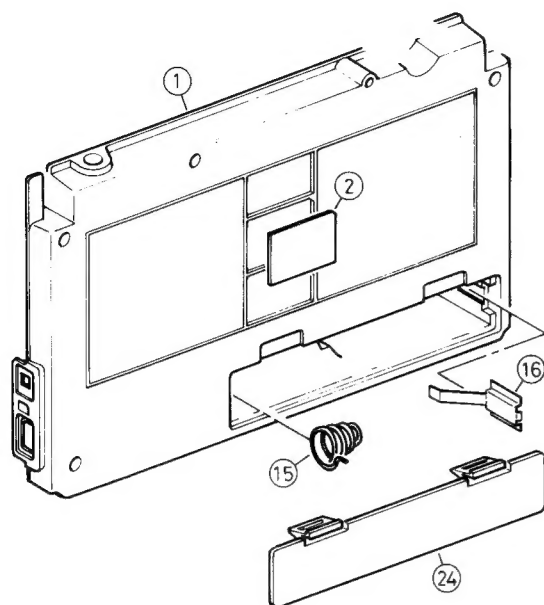


Fig. 49

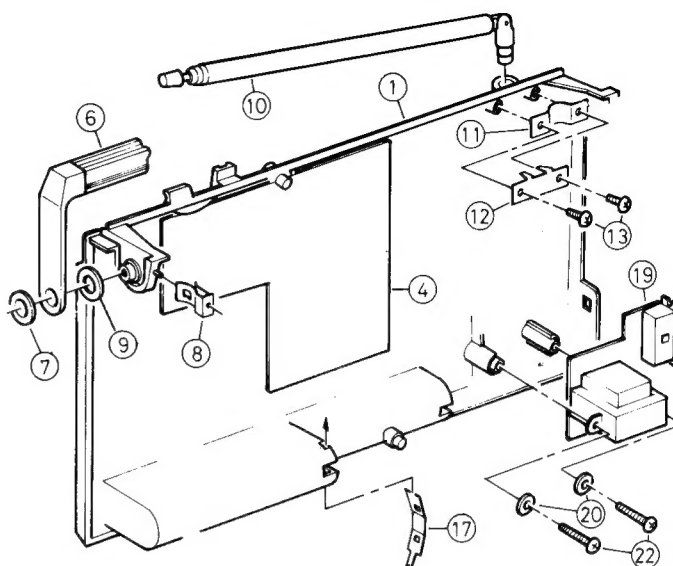


Fig. 50

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description	Q'ty
1~4	*ZCRC646LB-CBR	Rear Cabinet Ass'y		1
1	VJC1057-001	Rear Cabinet		1
2	*VYN5051-005CBS	Name Plate	Glued	1
3			Blank No.	
4	*VYH4300-00B	Shield Ass'y	Glued	1
5			Blank No.	
6	VJH4011-00A	Handle		1
7	Q03095-236	Washer		2
8	VKY4154-001	Spring		2
9	Q03093-521	Washer		2
10	QZR4333-001	Rod Antenna		1
11	V44195-002	Rod Antenna Holder (A)		1
12	VYH4189-001	" (B)		1
13	SBSB3008Z	Tapping Screw		2
14			Blank No.	
15	53738-1	Battery Spring		1
16	VYH4104-002	Contact		1
17	VYH4010-003	"		1
18			Blank No.	
19	* _____	Circuit Board Ass'y	Power Supply	1
20	Q03091-138	Washer		2
21			Blank No.	
22	SBSB3014C	Tapping Screw		2
23			Blank No.	
24	*ZCRC646-BCA	Battery Cover Ass'y		1

Final Packing Ass'y (RC-646LB)

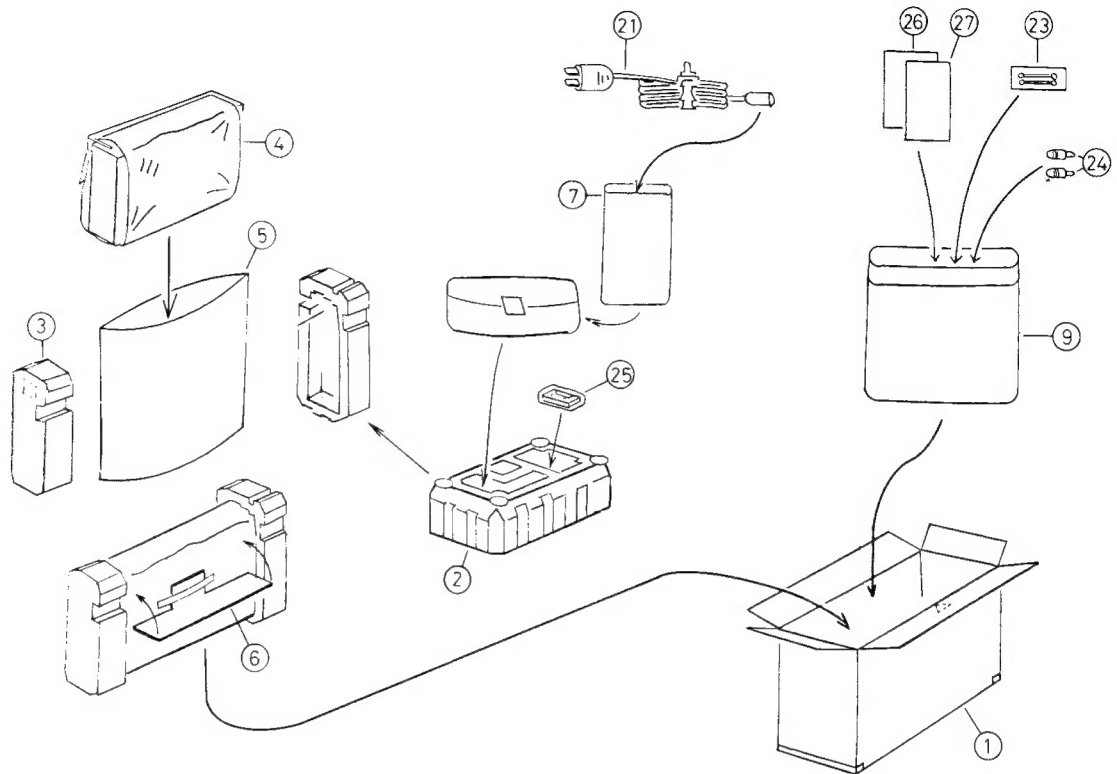


Fig. 51

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description	Q'ty
1	*VPD5051-J06	Carton Box		1
2	VPH1160-001	Side Cushion (R)		1
3	*VPH1164-001	" (L)		1
4	VHPJ079-036	Wrapping Paper		1
5	QPGA060-05005	Polyethylen Bag		1
6	*VPH4101-003	Protector	for Cassette Door	1
7	QPGA012-01505	Polyethylen Bag	for Power Cord	1
8			Blank No.	
9	QPGB024-03404	Polyethylen Bag	for Instruction Book	1

Accessories (RC-646LB)

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description	Q'ty
21	QMP3950-183	Power Cord	⚠ (Safety Assurance Part)	1
22			Blank No.	
23	*VYA4001-00A	Head Cleaning Stick		1 set
24	V04056-1	Shorting Plug		2
25	VGT12S2-J04	Cassette Tape		1
26	*VNM0736-301	Instruction Book		1
27	*VNC6305-001	Troubleshooting Chart		1
	*VNF0736-001	Feature Tag		1

Final Packing Ass'y (RC-646L)

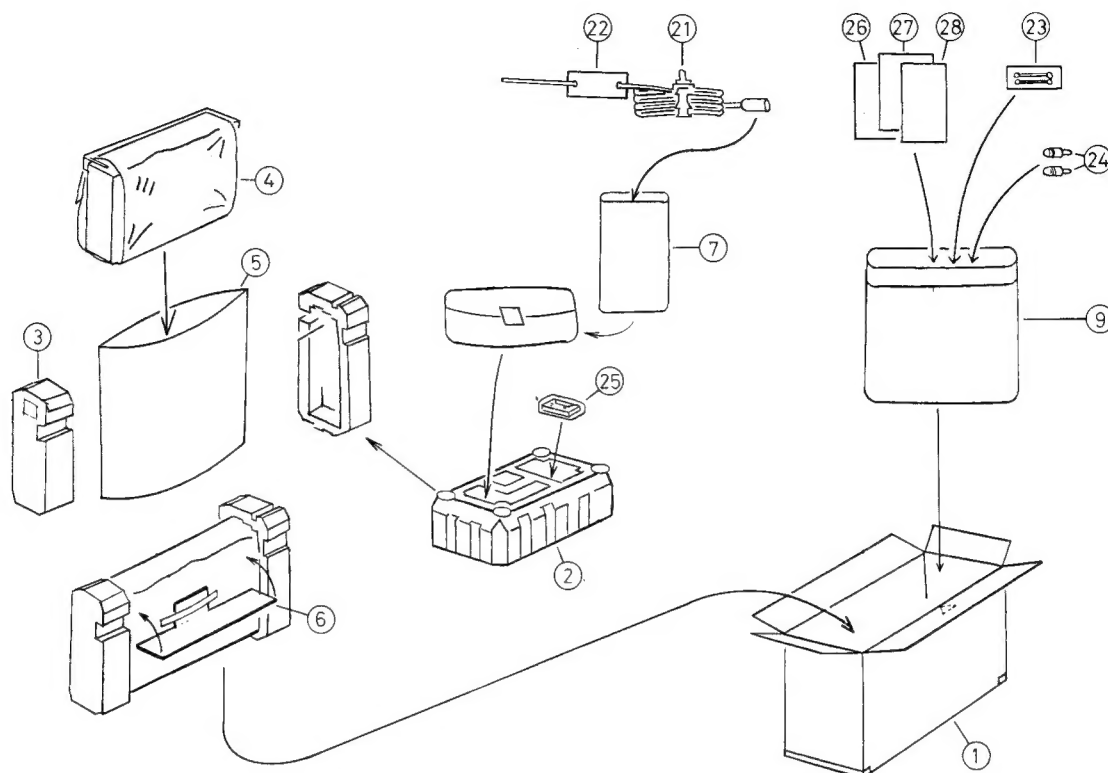


Fig. 52

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description	Q'ty
1	*VPD5051-J04	Carton Box		1
2	VPH1160-001	Side Cushion (R)		1
3	*VPH1164-001	" (L)		1
4	VHPJ079-036	Wrapping Paper		1
5	QPGA060-05005	Polyethylen Bag		1
6	*VPH4101-003	Protector	for Cassette Door	1
7	QPGA012-01505	Polyethylen Bag	for Power Cord	1
8			Blank No.	
9	QPGB024-03404	Polyethylen Bag	for Instruction Book	1

Accessories (RC-646L)

Asterisked parts (*) show new parts.

Ref. No.	Parts No.	Parts Name	Description	Q'ty
21	QMP9017-009BS	Power Cord	⚠ (Safety Assurance Part)	1
22	QZL1002-003BS	Warning Level	⚠	
23	*VYA4001-00A	Head Cleaning Stick		1 set
24	V04056-1	Shorting Plug		2
25	VGT12S2-J04	Cassette Tape		1
26	*VNM0736-301	Instruction Book		1
27	*VNC6305-001	Troubleshooting Chart		1
28	BT20013B	Guarantee Certificate		1
	*VNF0736-001	Feature Tag		1